DOCUMENT RESUME

ED 226 671 HE 015 939

TITLE	Study of Nursing Manpower Requirements and Resources in Kentucky, 1981 and 1985. Kentucky Nursing Education Project.
INSTITUTION	Kentucky State Council on Higher Education, Frankfort.
SPONS AGENCY	Kellogg Foundation, Battle Creek, Mich.
PUB DATE	Jul 82
NOTE	220p.; For related documents, see HE 015 919-920 and HE 015 937-941.
AVAILABLE FROM	Kentucky State Council on Higher Education, W. Frankfort Office Complex, U.S. Rt. 127 S. Highway, Frankfort, KY 40601.
PUB TYPE	Statistical Data (110) -- Reports - Research/Technical (143) -- reference Materials - Vocabularies/Classifications/Dictionaries (134)
EDRS PRICE	MF01/PC09 Plus Postage.
DESCRIPTORS	*Employment Projections; Glossaries; Health Facilities; Health Services; Higher Education; *Labor Demands; *Labor Supply; *Nurses; *Nursing Education; Occupational Surveys; *Statewide Planning
IDENTIFIERS	Kentucky; *Kentucky Nursing Education Project

ABSTRACT

The Kentucky Nursing Manpower Requirements and Resources Study (1981 and 1985) is one segment of a nursing project designed to develop a coordinated statewide system of nursing education in Kentucky. The study determined the number and types of nurses needed and compared current and anticipated nursing manpower supply and demand. Calculations of nursing manpower requirements were based on a modification of the Nursing Manpower Requirements Model of the Western Interstate Commission on Higher Education. In addition to identifying components of the model and assumptions about Kentucky's health care system, background information on Kentucky's demographic trends, regional planning, health care facilities, and nursing programs is presented. The model includes client population estimates, facilities data, staffing ratios, educational vectors, and criteria for the different types of nursing staff. In addition, a model for nursing manpower resources includes nurse licensure, nurse graduations, and a methodology for projecting nursing manpower supply. Study findings and recommendations and the following appended materials are included: a list of types and locations of nursing programs in 1981; staff ratio calculations; a list of criteria for nursing staffing and registered nurse educational preparation; and a glossary. (SW)

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STUDY OF NURSING MANPOWER REQUIREMENTS AND RESOURCES IN KENTUCKY 1981 AND 1985

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COUNCIL ON HIGHER EDUCATION
FRANKFORT, KENTUCKY
AUGUST 1982

STUDY
OF
NURSING MANPOWER REQUIREMENTS AND RESOURCES
IN
KENTUCKY
1981 and 1985

Developed by the Council on Higher Education's Subcommittee on Nursing Education and a Technical Advisory Group.

This study was made possible through a grant from the W. K. Kellogg Foundation.

Kentucky Nursing Education Project
Council on Higher Education
Frankfort, Kentucky
July, 1982

Foreword

This report of the Kentucky Nursing Manpower Requirements and Resources Study represents one segment of a nursing project to develop a coordinated statewide system of nursing education in Kentucky. The nursing project (1977-1982) has been administered under the auspices of the Council on Higher Education, and funded jointly by the Council and a W. K. Kellogg Foundation grant made available through the Southern Regional Education Board Nursing Curriculum Project.

Acknowledgement and appreciation are extended to the numerous individuals and organizations whose unfailing support and active involvement in Nursing Project activities have made this study possible.

Council on Higher Education Staff

Irene M. Hudleson, Ed.D., R.N.	Project Director Associate Director for Nursing Education
Carol Danehower, M.A.	Higher Education Specialist 1981-82
Linda Eldridge	Computer Programmer
Lydia Maness, M.S.	Higher Education Specialist 1979-80

Technical Advisory Group

*Dr. Virginia Barker, Chairman
Dean, School of Nursing
University of Louisville

Ms. Gwen Click
Health Administrator
Irvine Health Care Center
Irvine, Kentucky

Dr. James Davis
Vice President for Academic Affairs
Western Kentucky University
Bowling Green, Kentucky

*Ms. Martha Dilger
Director of Nursing Service
Saints Mary & Elizabeth Hospital
Louisville, Kentucky

Gary Leslie
Associate Director, Health Data
East Kentucky Health Systems Agency, Inc.
Winchester, Kentucky

Ms. Shirley Noah
Director of Nursing
Garrard County Memorial Hospital
Lancaster, Kentucky

*Charles D. Setliffe
Administrator
Saints Mary & Elizabeth Hospital
Louisville, Kentucky

Ms. Marcia Thompson
Administrator
Breathitt County Medical Center
Mountain Comprehensive Health Corp.
Jackson, Kentucky

---

*Members of CHE Subcommittee on Nursing Education.

Membership
of
Subcommittee on Nursing Education

Current Members

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Assistant Dean for Continuing Education
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Lexington, KY

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Office of Nursing, Bureau for Health Services
Department for Human Resources
Frankfort, KY

Ms. Martha Dilger (1976 -)
Assistant Administrator
Saints Mary & Elizabeth Hospital
Louisville, KY

Ms. Suzanne Dozier (1981 -)
Associate Chief, Nursing Service-Education
Veterans' Administration Medical Center
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Representing: Kentucky League for Nursing

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Murray, KY

Dr. David Gale (1979 -)
Dean, College of Allied Health and Nursing
Eastern Kentucky University
Richmond, KY

Dr. Mary Hazzard (1979 -)
Head, Department of Nursing
Western Kentucky University
Bowling Green, KY

Dr. Marion McKenna (1976 -)
Dean, College of Nursing
University of Kentucky
Lexington, KY

Ms. Margaret Miller (1979 -)
Chairperson, Allied Health/Nursing
Jefferson Community College
Louisville, KY
Representing: Kentucky Nurses' Association

Dr. LeRoy Overstreet (1981 -)
Head, Department of Allied Health and Nursing
Morehead State University
Morehead, KY

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Coordinator, Program Planning and Development
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Highland Heights, KY

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Richmond, KY

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Morehead, KY

Ms. Alma Jones (1977 - 1981)
Bureau of Health Services
Department for Human Resources
Frankfort, KY

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and Allied Health
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Morehead, KY

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Western Kentucky University
Bowling Green, KY

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Health and Nursing
Morehead State University
Morehead, KY

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Bureau of Vocational Education
Department of Education
Frankfort, KY

Charles Setcliffe (1978 - 1981)
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Hospital
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Louisville, KY

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Northern Kentucky University
Highland Heights, KY

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Acting Chairperson, Department of Nursing
Northern Kentucky University
Highland Heights, KY

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Florence, KY
Representing: Kentucky Nurses' Assoc.

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University of Kentucky
Lexington, KY
Representing: Kentucky Nurses' Assoc.

Ms. Doris McDowell (1977 - 1979)
Executive Director
Kentucky Board of Nursing
Louisville, KY

Sister Regina Monnig (1981)
Acting Dean, School of Nursing
University of Louisville
Louisville, KY

Dr. Diana Weaver (1981)
Acting Dean, College of Allied Health
and Nursing
Eastern Kentucky University
Richmond, KY

Mrs. Bess Witt (1976)
Bureau of Health Sciences
Department for Human Resources
Frankfort, KY

Ms. Lucille Wright (1979 - 1980)
Owensboro, KY
Representing: Kentucky Board of Nursing

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PART A

Nursing Manpower Requirements

CHAPTER I

INTRODUCTION

The objectives of the Kentucky Nursing Manpower Requirements and Resources Study are:

1. To determine the number and types of nurses needed now and in future years in Kentucky's health care system; and,
2. To compare current and anticipated nursing manpower supply with current and anticipated nursing manpower needs (requirements).

The findings of the study are expected to serve as guidelines for continuing development of an effective statewide nursing education system and health care delivery system, both of which are committed to the mutual goal of quality health care for the citizens of the Commonwealth of Kentucky.

Many basic sets of documented data have served as resource data for this study: population, health facilities, nursing program graduations, the nursing education and health care systems, licensed nursing manpower and Kentucky's topography and industry. The model by which these diverse sets of data have been merged into a cohesive and rational whole is the Nursing Manpower Requirements model, known as the WICHE model. The model resulted from the program Analysis and Planning for Improved Distribution of Nursing Personnel and Services (Gray & Sauer) sponsored by the Western Interstate Commission on Higher Education (WICHE) and the National Center for Higher Education Management Systems. It was designed to project nursing manpower needs at the national and state levels. For Kentucky, the model has been modified and used at the state and regional district levels with projections incorporating Kentucky specific normative nursing practice standards.

It may seem incongruent that in a time of nursing shortages, declining enrollments in nursing programs, budget cutbacks and widespread economic stress that the findings of a nursing manpower projection model can be meaningful. However, the goal of quality health care, changes in the health care system and the increasing need for greater expertise in nursing practice suggest that the WICHE model can be a valuable asset in identifying current and potential problem areas which, if left unattended, can further weaken an ailing health care delivery system. Unquestionably the application of the model, and the findings, carry implications for state and federal regulations, standards and accreditation criteria.

The WICHE Nursing Manpower Requirements model, as modified and adapted to Kentucky-specific data, produced nursing manpower requirement calculations for 1981 and 1985. (A computer program has been designed for this Kentucky model so that projections can be made for any given year.) Projections of nursing manpower needed take on far greater meaning when compared with nursing manpower resources -- the licensed nurse supply in 1981, and the supply expected to be employed in 1985. For example, the 1981 registered nurse requirements for Kentucky at the state level indicated that of the total number of nurses needed in nursing employment, the "mix," or distribution by educational population, should be:

41.9% hospital diploma/associate degree nursing graduates,
37.5% baccalaureate degree nursing graduates,
19.5% master's degree nursing graduates, and,
1.0% doctoral degree nurse graduates.

How near to that percentage mix of nurse graduates are we? According to reported nurse licensure data at the statewide level in July, 1981 (Kentucky Board of Nursing, 1981), the mix of registered nurses by highest educational level achieved and employed in nursing was:

75.1% hospital diploma/associate degree nursing graduates,
17.1% baccalaureate degree nursing graduates,
2.6% master's degree nursing graduates,
0.3% doctoral degree nurse graduates,
4.4% holding a baccalaureate or master's degree in a discipline other than nursing, and,
0.3% unknown

Although numbers tell us "how many," it is the utilization of nursing graduates commensurate with their preparation that is one of the critical factors in providing quality health care. The correlate factor is, of course, the quality and appropriateness of nursing education programming. The WICHE model produces not only numbers of nurses needed but distinguishes the nursing preparation needed from basic to advanced levels, as adjudged by standard educational programming. It is this combination of findings which can provide direction not only for nursing education planning but for further development of the health care delivery system also.

CHAPTER II

OVERVIEW OF THE COMMONWEALTH OF KENTUCKY

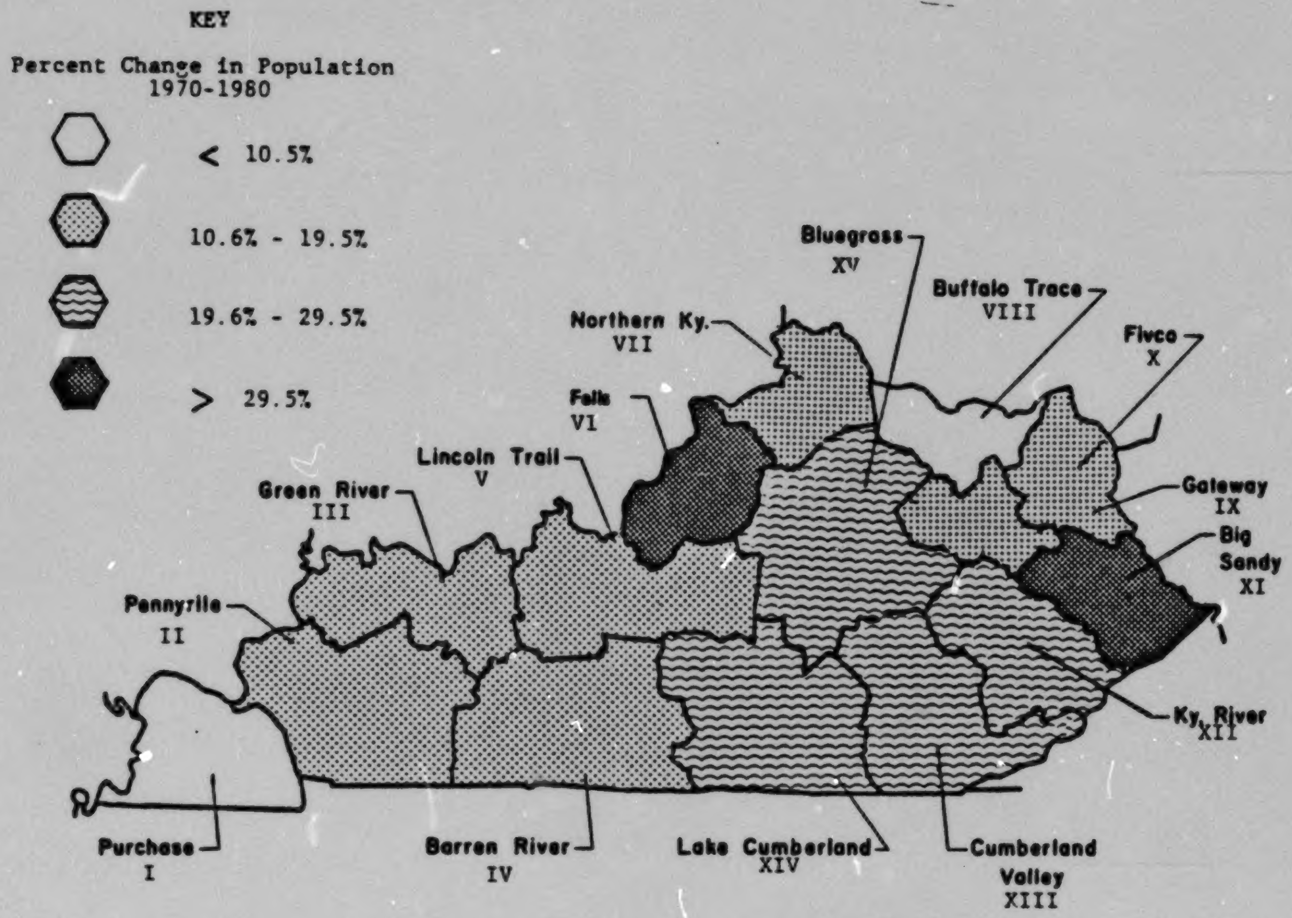
I. Demographic

The Commonwealth of Kentucky is essentially a rural state covering 40,395 square miles and, according to the 1980 census, having a resident population of 3,661,433 people. From 1970 to 1980 the state experienced a 13.7 percent increase in population, with the greatest increases occurring in the Louisville area (ADD VI) with 31.5% increase, and the easternmost district of Kentucky (ADD XI) with an increase of 37.2%. (Figure 1.)

Kentucky is contiguous with the States of Ohio and Indiana to the north, Missouri and Illinois to the west, Tennessee to the south and Virginia and West Virginia to the east. The eastern section of Kentucky lies within the Appalachian mountain chain, leveling off to foothills as the Ohio River Valley midsection of the state is approached. Kentucky has several distinct geographical regions, each with different terrains, economies and cultures. In the mountainous low-income eastern section, coal mining and oil refining are the major industries. The affluent Bluegrass area of central Kentucky is a world center for the breeding and sale of champion horses, while the northern and western section of the state support tobacco farming, cattle rais-

Figure 1

Commonwealth of Kentucky
Percent Change in Population
1970-1980


KEY
Percent Change in Population
1970-1980
< 10.5%
10.6% - 19.5%
19.6% - 29.5%
> 29.5%
Bluegrass XV
Buffalo Trace VIII
Northern Ky. VII
Fivco X
Falls VI
Lincoln Trail V
Green River III
Gateway IX
Big Sandy XI
Pennyrile II
Ky. River XII
Purchase I
Barren River IV
Lake Cumberland XIV
Cumberland Valley XIII

Area Development District		Percent Change
I.	Purchase	+ 5.4
II.	Pennyrile	+13.8
III.	Green River	+11.7
IV.	Barren River	+14.0
V.	Lincoln Trail	+14.1
VI.	Falls	+31.5
VII.	Northern Kentucky	+16.0
VIII.	Buffalo Trace	+ 8.2
IX.	Gateway	+19.6
X.	Fivco	+19.6
XI.	Big Sandy	+37.2
XII.	Kentucky River	+22.5
XIII.	Cumberland Valley	+23.4
XIV.	Lake Cumberland	+18.6
XV.	Bluegrass	+20.9
	STATE	+13.7

SOURCE: University of Louisville
Urban Studies Center
Louisville, Kentucky, 1980.

ing, liquor distilleries and small industries. A modern intrastate road system interconnects regional areas of the state, while Interstate roads 64,65,71, and 75 intersect the state for east-west and north-south through traffic.

II. Regional Planning

Although Kentucky is governmentally sectioned into 120 counties, the concept of substate regionalism was adapted to Kentucky through legislation in 1972 and resulted in the grouping of all counties into fifteen Area Development Districts. Agencies within each district are incorporated as non-profit organizations that address regional economic and developmental planning. The purpose in forming the Area Development District was to provide the citizens of Kentucky "a higher quality of life by insuring them more effective, efficient local governments, that [could] respond to their constantly changing needs." (Robinson, 1979.)

Designated regional health planning agencies include East Kentucky Health Systems Agency and Kentucky Health Systems Agency West. The three northernmost Kentucky counties of Boone, Campbell and Kenton are, however, included in the Central Ohio River Valley Association health systems agency because of their close proximity to the metropolitan Cincinnati area.

Data concerning the nursing education system and nursing manpower resources in Kentucky are generally reported according to Area Development District designation. In this way health planning can be facilitated at the local and regional levels throughout Kentucky.

III. Health Care Facilities

There are approximately seven hundred licensed health care facilities of various types in Kentucky. Hospitals, nursing homes (skilled and intermediate care), public health departments and home health agencies represent about seventy percent of the total number of health care facilities (Table 1).

Table 1

HEALTH CARE FACILITIES IN KENTUCKY, 1981

Type of Facility	Total Number
Hospitals	
Psychiatric	10
Long-Term Acute Care	9
Short-Term, Small under 100 beds	61
Short-Term, 100-400 beds	41
Short-Term, large, over 400 beds and Teaching Hospitals	7
Skilled and Intermediate Care Facilities	191
Community Health (public health Departments and Home Health Agencies	168
Total	487

The remaining licensed health facilities provide specialized services such as primary care, drug and alcohol/ detoxification, mental health and mental retardation, renal dialysis and rehabilitation. There are other facilities which serve as practice settings for nurses, such as industries and physicians' offices, but these do not require licensure as a health care facility.

Access to health care, particularly for residents in remote rural communities, is but one of many health care system concerns with which Kentucky is faced. For example, the mountainous, narrow roads of Eastern Kentucky increase driving time between residents and the nearest health care facility. In some rural communities there is limited availability of complex or critical care services and/or physicians. Rising costs of health care in a depressed economy also negatively influence health care accessibility and the availability of health care personnel.

There are two movements in particular in Kentucky which are partially aimed towards improving the accessibility of health care for Kentucky citizens within a constrained economy. The development of primary care centers and the provision for primary care services in hospitals are of significance in Kentucky. Primary care, which focuses on health maintenance and early detection and treatment of illness, contributes to goals of preventive medicine and provides essential services which might otherwise be unavailable to large sectors of the population.

A second movement of consequence in Kentucky is the development of comprehensive care services in small community hospitals Although this movement is in its very early stage of growth, it is anticipated that urban as well as rural communities will increasingly have greater access to some types of care traditionally available only in large, metropolitan-centered hospitals.

The expanding development of primary and comprehensive care services has implications for health care manpower which includes nursing manpower. Essential factors in health care planning decisions relate to the effective procurement and utilization of health personnel having the skills and knowledge necessary to support existing and new services. These factors, as well as economic considerations, represent important aspects of health care facility developments.

IV. Nursing Programs

In 1981 there were a total of 33 nursing education programs in Kentucky addressing registered nurse practice. (See Appendix for list of programs.) Twenty-five of these programs prepare students for registered nurse licensure eligibility, and are usually referred to as "basic" programs which supply "new" nurses. These nursing education programs included one diploma offered by a private hospital, and twenty associate degree and five baccalaureate degree offered by state and independent colleges and universities.

Another five baccalaureate degree nursing programs are designed specifically for the registered nurse who is a graduate of a hospital nursing diploma program or an associate degree in nursing program. These "BSN for RNs" programs are sometimes referred to as "plus two" or "upper-division" programs, because they build on the standard content of diploma and associate degree programs and focus upon curriculum content appropriate to the junior and senior (3rd and 4th) years of a baccalaureate in nursing degree program. (Generic baccalaureate degree programs also have Registered Nurse students.)

The remaining three of the total thirty-three programs offer advanced nursing curricula at the master's degree level. Collectively the master's programs offer advanced preparation in clinical practice specialties such as pediatrics, medical-surgical nursing, nurse midwifery and family nurse practitioner practice, as well as preparation for teaching and administration.

Many changes have occurred in the nursing education system over the past decade. Most of these changes have been in response to changing needs within the health care system itself, i.e., new technology, emerging health personnel roles, socioeconomic change. In turn, the number and types of nursing programs offered have been affected. Following a national trend, the number of hospital diploma programs has declined, associate degree programs have multiplied rapidly, and the baccalaureate degree program for registered nurses has emerged.

The number of practical nursing programs, which prepare students for practical nurse licensure eligibility, has remained essentially the same over the past decade. These programs, now sixteen in number, produce approximately 500 graduates per year.

The various types or levels of nursing education programs differ in content, complexity and range with a subsequent difference in skills expected of the graduates. This hierarchy of educational levels emerged as the patient care services became more highly specialized. The demand for nurses with advanced and specialized skills was inevitable.

CHAPTER III

The Kentucky Nursing Manpower Requirements Model

I. Developmental Process

The WICHE Nursing Manpower Requirements model was adapted to Kentucky-specific data so that full value of the methodology could be attained. Modifications were made in three basic areas of the model: Facility Classification, Criteria for Staffing and Criteria for R.N. Educational Preparation. Although many of the original WICHE model calculations were retained, for purposes of clarity the modified Kentucky model is referred to herein as the Kentucky Nursing Manpower Requirements model.

A technical advisory group composed of representatives of the health care system was appointed to work with the Nursing Education Project staff in modifying the WICHE model for use in Kentucky. This group, referred to herein as the Kentucky TAG, gave indepth discussion to every component of the WICHE model over an extensive period of time. In instances where additional types of expertise were needed, information was sought from relevant individuals throughout Kentucky.

During the period that the Kentucky TAG was meeting, Council staff researched model input data regarding population, health facilities and health services, and developed the computer program necessary for implementation of the Kentucky model. At the conclusion of the Kentucky TAG work, model modifications were referred to the Council's Subcommittee on Nursing Education for review and recommendations. The results of these deliberations are described in this report, and consolidated summaries of this information appear in Tables 3 and 5. The WICHE Panel of Expert Consultants' Criteria for Nursing Staffing and R. N. Educational Preparation is included in the Appendix.

II. Assumptions About Kentucky's Health Care System

A. General Considerations

The Kentucky TAG, in their deliberations about the current status of the state's health care system, speculated about conditions, limitations and potential trends which could influence the viability of nursing manpower requirement projections. Underlying these considerations was the conviction that quality of care should be a dominant factor in determining criteria for manpower projections. Although the group recognized that quality of care as expressed through individual nursing practice could not be projected, it was their opinion that the potential for quality care was greater when the numbers and preparation of staff were sufficient to meet the specific needs of patient care services.

B. Hospitals and Primary Care Centers

Hospital nursing services represent the largest single type of patient service in any hospital, and collectively employ approximately three-fourths of the overall employed nursing manpower pool. Hospitals, therefore, constitute a major component of the health care system, and nurses are a major group of health care personnel.

In considering hospital facilities in Kentucky, the Kentucky TAG did not envision the construction of new hospitals in the near future, and assumed there would not be a significant increase in the number of licensed hospital beds. They reasoned that, if the population increases, the number of hospital beds would probably increase. However, if alternate methods of patient care emerge, the population/bed ratio may decrease but with the number of beds remaining essentially the same.

Two specific developments in Kentucky's health care system were viewed as having a potential and major influence upon the future of hospitals: the continuing development of primary care centers, and, the concept of regional medical centers. Primary care centers emerged as part of the national movement toward preventive health practices. The single-standing primary care center is helping to meet a well-documented health care need, particularly in the rural areas of Kentucky. Primary care services are being initiated and/or expanded in a variety of other health care settings, including hospitals. As a result of this development, the hospital patient population is expected to gradually change to one having the more serious illnesses which require highly specialized technology and personnel.

In contrast, small hospitals may change their role from providing acute care to providing primary care services. In Kentucky, small hospitals represent the majority of hospital facilities. The concept of the regional hospital or medical center suggests that the surrounding small hospitals, in converting to primary care centers, could become referral units for the regional hospital. Major factors that are thought to be influencing the regional hospital concept relate to cost effectiveness measures, populace inaccessibility to complex tertiary hospital care, and limited availability of specialized health care personnel.

Another factor which may impinge upon changes in small hospitals is the corporate proprietary merger. This type of merger involves the acquisition of small hospitals by major proprietary hospital corporations. The thrust of services offered may not change radically, but the executive staff would be represented at the corporate level rather than at the individual hospital level. Although the corporate merger concept is not new, it is gaining substance in Kentucky.

C. Nursing Manpower

A basic need in formulating and using the findings of a nursing manpower requirements study is to recognize and understand fundamental differences between broad categories of nursing care, of nursing education and of nursing roles. These differences impact upon the entire health care system, and adversely so when they are not adequately understood. With the anticipation of stronger standards for health care being implemented at the national and state levels, it would seem imperative that estimates of nursing manpower needed in future years reflect known differences in health system classifications, and that these differences be clarified.

Nursing care has been broadly classified into three types: primary, secondary and tertiary. In *A Proposed System for Nursing* (Haase) the roles of nurses engaged in these types of nursing care are described clearly and in depth. At the risk of oversimplification, and to paraphrase Haase, these three broad categories of patient care are defined as follows:

> *Secondary care* nursing relates to patients having common, well-defined and recurring illnesses which are relatively predictable in terms of outcome. The usual setting for this level of nursing practice is the community hospital. Secondary care nursing is the foundation for the more specialized primary and tertiary care nursing.
>
> *Primary care nursing* relates to client services for health maintenance and health promotion. It involves health assessment, screening and referral of clients in need of further treatment, and, management of long-term care clients having chronic health problems. The usual settings for this level of nursing practice are community health agencies and primary care centers and clinics.
>
> *Tertiary care nursing* relates to patients having acute and critical illnesses which are complex and less predictable in outcome. The usual setting for this level of nursing practice is the larger hospital and/or medical center.

Nursing education addresses primary, secondary and tertiary care in the skills, knowledge and clinical experience planned for nursing students. All basic programs, those preparing "new" nurses, focus upon the skills and knowledge required for nursing practice in secondary care, which is central to all nursing practice. These programs include: the hospital diploma program, the associate degree program, and the "generic" baccalaureate degree program. The baccalaureate program, however, also prepares the student to function as a beginning practitioner in primary care and tertiary care, in community health nursing and, to some extent, in basic management and leadership roles.

The baccalaureate program designed for registered nurses is not considered a "basic" program since the students have already graduated from a hospital diploma or associate degree program. However, the objectives for student achievement at the conclusion of the program are generally the same as for the basic "generic" baccalaureate degree program.

The master's degree program in nursing provides advanced knowledge, skills and clinical experience in clinical specialization, teaching, supervision/administration and/or research. Clinical specialization may be in primary care for the nurse practitioner role, midwifery, or a particular specialty for the clinical specialist role such as pediatric nursing or psychiatric nursing and which may include primary, secondary and/or tertiary care components. Doctoral degree level programming provides further specialization in a given field of practice, and usually includes a strong base in research.

In the nursing requirements projection model used in Kentucky, the nursing education program system, as it currently functions, serves as the criteria for determining the educational preparation appropriate to specific roles and practice settings. Neither individual experience nor self-directed individual learning can be documented for projection purposes, hence the necessity of using the nursing education system as the standard for projecting nursing manpower requirements.

D. Forces Affecting Nursing Manpower Utilization

1. Entry into practice issue.

Within the nursing profession there is a national movement toward requiring the baccalaureate in nursing degree as the entry level for professional nursing. This position of the nursing profession, which is endorsed by the American Nurses' Association and the National League for Nursing, has emerged for many reasons, not the least of which is the rapidly increasing complexity of patient care and nursing practice. This position, first proposed in 1965 by the American Nurses' Association, makes a distinction between professional nursing (as represented in baccalaureate degree nursing programs) and technical nursing (as represented in associate degree nursing programs). Although the terms "professional" and "technical" are not universally accepted, they represent the effort to designate two types or levels of nursing expertise appropriate to patient care needs and beginning nursing practice in today's health care system. Technological advances and socioeconomic changes have quietly but persistantly mandated reciprocal changes in the system which prepares nurses for nursing practice in a period approaching the Twenty-First Century.

2. Nursing Shortage

The apparent shortage of nurses is an issue which is being addressed nationwide. Within this issue are subsumed other issues -- maldistribution of nurses, over- and under-utilization as well as deficits and surpluses of certain types of prepared nursing personnel, employment turnover -- all of which contribute to the general complexity of the situation.

In rural areas of Kentucky, the difficulty of recruiting new nurses does not seem to change. The problem appears to be a socioeconomic one: insufficient employment opportunities in business and agriculture for nurses' spouses.

State and/or federal health service regulations inadvertently create problems of utilization when the stated wording does not discriminate between the types of nurses needed by educational level. A regulation may also indicate the use of "a licensed practical nurse or a registered nurse," a supposition that these two differently prepared nurses are alike and/or interchangeable in a given role. Additional confusion is created when a regulatory statement includes required "advanced training" but does not define what that training should be.

III. Components of the Model

A. General Considerations:

There are four broad components of this nursing manpower projection model: client population estimates, facilities data, staffing ratios and educational vectors. Requirement projections for registered nurses and licensed practical nurses in various practice settings and positions are derived from calculations for these four basic model components. The Kentucky TAG modified, to some extent, each of the four basic components in order to:

- reflect the facilities and services classifications officially used in Kentucky by the Department for Human Resources for data collection;
- accommodate special classifications for which there are limited data;
- reflect the administrative and instructional positions inherent in nursing service and nursing education;
- reflect specialized nursing roles; and,
- reflect the "state of the art" of nursing in Kentucky.

Resultant projections for nursing personnel are in terms of full-time equivalency for staffing ratios, and percentages for educational vectors. Staffing ratios are presented as average ratios since finite differences in staffing methodologies and "best ratio mix" for specific nursing service units cannot be separated out in the model for individual practice settings in the state.

B. Client Population Estimates

The nursing manpower requirements model is essentially a population-based model. In patient service categories of practice settings, final projections are derived from a Registered Nurse/10,000 population base in most instances.

Although population is the least flexible component of the model, some flexibility exists in the choice of the appropriate population cohort used as the basis for projection. Population subgroups distinguished by age ranges have different health needs; therefore the population is differentiated by age to provide greater insight into the types of nursing personnel needed for specific facilities and services provided for specific populations.

Population estimates are given in terms of age category, live births and infant deaths for each projection year. Population estimates officially used in Kentucky are generated by the Urban Studies Center of the University of Louisville. Projections of live births and deaths have been based on historical data of these vital statistics using a method developed at the Urban Studies Center. Population by age categories (cohorts) that were used in the WICHE model are also used in the Kentucky model, but with one exception: The cohort used for school health nursing was restricted to ages 5 through 17. (Population cohorts are listed in Table 2.)

Table 2

POPULATION COHORTS USED FOR REQUIREMENT PROJECTIONS

DIRECT CLIENT CARE R.N.'s	Cohort Used
A. Inpatient Services	Total Population
B. Other Hospital Services	Total Population
C. Long-Term Care Facilities	Population Age 65 and over
D. Physicians' Offices	*
E. Community Health	
1. Home Health	Total Population Population Age 65 and over
2. General Home Visits	
a) Without Prenatal care	Live Births, infant deaths
b) High risk and other follow-up	Live Births
c) Other morbidity	Population under 18
d) Active TB and hepatitis	Total Population
e) Chronic illness	Population Ages 18-64
f) Environmental visits	Total Population
3. Health Clinic Visits	Total Population
4. School Health Nursing	Population Ages 5-17
5. Occupational Health Nursing	Population ages 18-64
HEALTH-RELATED ORGANIZATIONS	Total Population
PRIVATE DUTY NURSES	Total Population

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*No cohort used for calculating these projections.

C. Facilities Data

1. Categories and Classifications:

Facilities categories and classifications refer to patient services, the type of facilities which provide these services, specialized nursing roles, nursing education facilities and organizations which provide health-related services of a specialized nature. Projections are made at the state level for all facility categories and classifications. Projections at the district level are only for those facilities located in the majority of districts and which serve primarily the district population. Table 3 presents a comparison of facilities categories and classifications used in the WICHE model with those used in the Kentucky model.

Table 3

A COMPARISON OF THE FACILITIES, CATEGORIES AND CLASSIFICATIONS USED IN THE WICHE NURSING MANPOWER REQUIREMENTS MODEL WITH THE FACILITIES, CATEGORIES AND CLASSIFICATIONS USED IN THE KENTUCKY NURSING MANPOWER REQUIREMENTS MODEL*

WICHE MODEL	KENTUCKY MODEL
I. INPATIENT SERVICES	I. INPATIENT SERVICES
a. General units (include adult medical-surgical, pediatrics, and maternity)	a. Long-term acute care hospital
b. Rehabilitation units	i. psychiatric
c. Newborn units	ii. orthopedic/rehabilitation
d. Critical care units	iii. intermediate care/mentally retarded
e. Extended care units	
f. All units in hospitals under 100 beds	b. Short-term acute care hospital
g. Long-term hospitals (psychiatric)	
h. Psychiatric units in all short-term hospitals	i. small, under 100-bed hospital
	ii. 100-400 bed hospital
	(a) newborn unit
	(b) general acute care
	(c) critical care unit
	iii. Large, over 400 beds and teaching hospital
	(a) newborn unit
	(b) general acute care
	(c) critical care unit
II. OTHER HOSPITAL SERVICES	II. OTHER HOSPITAL SERVICES
a. Surgical	a. Operating room
b. Emergency	b. Emergency Room
c. Outpatient clinic visits	c. Outpatient clinics

WICHE MODEL	KENTUCKY MODEL
III. NURSING HOMES	III. LONG-TERM CARE FACILITIES
a. Nursing care homes	a. Skilled Nursing/Nursing Home
b. Personal care homes with nursing	b. Intermediate care
IV. PHYSICIANS' OFFICES	IV. PHYSICIANS' OFFICES
V. COMMUNITY HEALTH	V. COMMUNITY HEALTH
a. Home health	a. Home health
b. General public health	b. General home visits
c. Clinics	c. Health clinic visits
	i. health departments
	ii. primary care centers
	iii. mental health clinics
d. School health nursing	d. School health nursing
e. Occupational health nursing	e. Occupational health nursing
VI. ADMINISTRATIVE POSITIONS	VI. NURSE ADMINISTRATORS
A. Executive Nurse Administrator	A. Executive Administrator
a. All hospitals (director)	a. Psychiatric
b. Large, over 400-bed and teaching hospitals and/or associate directors)	b. Long-term acute care
c. All other short-term hospitals (assistants and/or associates)	c. Short-term acute care
	i. small, under 100-bed hospitals
	ii. 100-400 bed hospitals
	iii. large, over 400-bed and teaching hospitals
d. Nursing care homes (director)	d. Skilled and Intermediate care
e. Personal care homes (director)	e. Community Health
f. Community Health (director)	

WICHE MODEL	KENTUCKY MODEL
B. Mid Level Nurse Administrator/Manager	B. Mid Level Nurse Supervisor
a. All hospitals (head nurse)	a. Psychiatric
b. All hospitals (supervisor)	b. Long-term acute care hospitals
c. Nursing care homes	c. Short-term acute care
	i. small, under 100-bed
	ii. 100-400 bed hospitals
	iii. large, over 400-bed and teaching hosp.
d. Personal care with nursing	
e. Community Health	
VII. INSERVICE INSTRUCTORS	VII. NURSING STAFF DEVELOPMENT
A. Short-term, Large, Teaching Hospitals	A. Large, Over 400-Bed and Teaching Hospitals
B. Nursing Homes and All Other Hospitals	B. Short-term Acute Care Hospitals, 300-399 Beds
C. Community Health Nursing	C. Short-term Acute Care Hospitals, 200-299 Beds
	D. Short-term Acute Care Hospitals, 100-199 Beds
	E. Short-term Acute Care Hospitals, under 100 Beds
VIII.SCHOOLS OF NURSING	VIII. SCHOOLS OF NURSING
A. Administrators	A. Administrators
a. Doctorate Program	a. Doctorate Program
b. Master's Program	b. Master's Program
c. Baccalaureate Program	c. Baccalaureate Program
d. Associate Degree Program	d. Associate Degree Program
e. Diploma Program	e. Diploma Program
f. Practical Nurse Program	f. Practical Nurse Program

WICHE PANEL OF EXPERTS	KENTUCKY MODEL
IX. RESEARCHERS AND CONSULTANTS	IX. RESEARCHERS AND CONSULTANTS
X. PRIVATE DUTY	X. PRIVATE DUTY
XI. HEALTH RELATED ORGANIZATIONS	XI. HEALTH RELATED ORGANIZATIONS
XII. CLINICAL SPECIALISTS	XII. CLINICAL SPECIALISTS
A. Large Teaching (more than 400 beds)	These R.N.'s were not accounted for separately in the Kentucky model. Instead, staffing for these nurses was included in the staffing ratios and educational vectors for the appropriate settings.
B. All Other Short-term Hospitals	
C. Nursing Care Homes	
D. Personal Care Homes with Nursing	
E. Hospital Ambulatory Care	
F. Community Health Nursing	
XIII.NURSE PRACTITIONERS	XIII. NURSE PRACTITIONERS
(Numbers of nurse practitioners are included in the above projections-this part of the model merely projects the number of R.N.'s with nurse practitioner skills and preparation of the number already projected.)	These R.N.'s were not accounted for separately in the Kentucky model. Instead, staffing for these nurses was included in the staffing ratios and educational vectors for the appropriate settings.
A. Hospital Ambulatory Care	
B. Physicians' Offices	
C. Nursing Homes	

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*Adadapted from the WICHE Model.

2. Facility Occupancy Rates:

The occupancy rate of an inpatient care facility is an average rate of patient occupancy. It is determined through calculations of the average daily census, the hospitals' reporting period and the number of licensed beds for reported patients days, as illustrated in Table 4.

Table 4

Steps in Calculating Facility Occupancy Rate

Step 1. Calculate the ADC (Average Daily Census)

$$\text{ADC} = \frac{\text{number of patient days reported}}{\text{365 (or the number of days in the reported period)}}$$

Step 2. Use the ADC to calculate the occupancy rate:

$$\text{Occupancy rate} = \frac{\text{ADC}}{\text{Number of licensed beds reporting patient days}}$$

The occupancy rates are input data for projecting direct client care nursing staff needs for hospital inpatient services and long-term care in intermediate and skilled care nursing homes.

3. Beds/Population Ratio:

The total number of licensed beds for hospitals and long-term care facilities are used to calculate the bed/population ratio, using the appropriate population cohort. The ratio of number of beds per 10,000 population is generally used in this model. This bed/population ratio is used as input data for projecting direct client care nursing staff needs for inpatient services in hospitals and long-term care facilities.

D. Staffing Ratios

Numerous changes were made in this component of the model to reflect the resources and realities of health care in Kentucky. However, the basic formula for projecting direct client care staffing in patient facilities proposed in the WICHE model was retained in the Kentucky model. This formula assumes the following conditions:

i Staffing for a group of patients requires nurses on three shifts for each day.

ii One full-time equivalency (FTE) nurse will work 1,800 hours per year on the average.

iii 4.9 FTE nurses are required to provide one nurse for each of the 21 work shifts of the week, based on 1,800 hours of work. (This allows for a standard work week, holidays, vacation and sick leave taken.) (Formula calculations are included in the Appendix.)

It should be noted that projections for registered nurse requirements in direct client care staffing for inpatient services refer primarily to the nurse prepared at the hospital diploma/associate degree level and the baccalaureate level. Projections for the master's degree prepared nurse that appear in direct client care staffing and are denoted in the educational vector refer specifically to the clinical nurse specialist role. The clinical nurse specialist is one who has advanced preparation in a clinical nursing specialty and is prepared to teach, guide and assist staff nurses in providing competent and individualized nursing care to patients.

Throughout the projection model the criteria for staffing vary according to the type and size of practice setting, the type of service provided, the nature of the nursing care involved, and/or the assumed scope of responsibility of given positions. These criteria refer to ratios:

a. RN/Number of Patients (Direct Client Care)

b. RN/Number of Services (Other Hospital Services)

c. RN/Shift (Long-Term Care Facilities)

d. RN/Number of Physicians (Physicians Office)

e. RN/Visits or Population (Community Health; Health-Related Organizations)

f. RN/Size of Institution (Administrative/ Teaching positions in hospitals)

g. RN/Number of Students (Administrative/ Teaching Positions in Schools of Nursing)

h. RN/Direct Client Care RNs (Researchers and Consultants)

In projecting staffing needs, the WICHE model recommended a range for staffing termed "lower bound" and "upper bound." These terms have been retained in the Kentucky model and are intended to convey recommended parameters for staffing. Table 5, illustrates all criteria for staffing with projections for lower and upper bounds and the educational vectors used in the Kentucky model.

Table 5

Criteria for Nurse Staffing and R.N. Educational Preparation Used in the Kentucky Nursing Manpower Requirements Model**

	Criteria for Staffing					Criteria for R.N. Educational Preparation		
Field of Employment	Lower Bound		Upper Bound		DOC (%)	MSN (%)	BACC (%)	AD/DIP (%)
	R.N.'s (per 100 Pts.)	L.P.N's (per 10 R.N.'s)	R.N.'s (per 100 pts)	L.P.N.'s (per 10 R.N.'s)				
INPATIENT SERVICES								
Long-term Acute Care								
Psychiatric	13	7.7	22	4.5	0*	15.4*	50*	34.6*
Orthopedic/Rehabilitation	49*	11*	76*	11*	0*	7.9*	46.05*	46.05*
Intermediate Care/Mental Retardation	19.6*	20*	24.5*	10*	0*	0*	33.33*	66.67*
Short-term Acute Care								
Small, under 100 beds	49*	2.4	56.5	2.1	0*	5*	19*	76*
100-400 bed hospitals								
General Acute Care	49	2.4	56.5	2.1	0*	5.8*	23.55*	70.65*
Newborn Unit	49	2.4	56.5	2.1	0*	5.8*	23.55*	70.65*
Critical Care Unit	250*	0	300*	0	0*	5.8*	31.40*	62.80*
Large, over 400 beds or teaching hospitals								
General Acute Care	49	2.4	56.5	2.1	0*	7.4*	23.15*	69.45*
Newborn Unit	49	2.4	56.5	2.1	0*	7.4*	23.15*	69.45*
Critical Care Unit	300*	0	350*	0	0*	7.4*	30.87*	61.73*

**

Field of Employment	Criteria for Staffing Lower Bound		Upper Bound		Criteria for R.N. Educational Preparation DOC (%)	MSN (%)	BACC. (%)	AD/DIP (%)
	R.N.'s/ 1000 services	L.P.N.'s/ 10 DCC R.N.'s	R.N.'s 1000 Services	L.P.N's/ 10 R.N.'s				
OTHER HOSPITAL SERVICES								
Operating Room	1.5	0	1.8	0	0*	0*	0*	100*
Emergency	.22	5	.44	5	0*	4.8*	47.6*	47.6*
Outpatient	.15	10	.24*	10	0*	14.3*	76.2*	9.5*
	R.N.'s/ 100 pts.	L.P.N.'s/ 10 R.N.'s	R.N.'s/ 100 pts.	L.P.N.'s/ 10 R.N.'s				
LONG-TERM CARE								
Skilled Nursing/ Nursing Home	5.39*	6.70*	12.99*	6.70*	0*	0*	25	75*
Intermediate Care	4.9*	30*	8.1*	30*	0*	0*	14.29*	86.71*
	R.N.'s/10 M.D.'s	L.P.N.'s/10 R.N.'s	R.N.'s/10 M.d.'s	L.P.N.'s/10 R.N.'s				
PHYSICIANS' OFFICES	2.0	3	2.2	2	0	25	25	50

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Field of Employment	Criteria for Staffing Lower Bound	Criteria for Staffing Upper Bound	Criteria for R.N. Education Preparation DOC (%)	MSN (%)	BACC. (%)	AD/DIP (%)
	R.N./10,000 Population Cohort	R.N./10,000 Population Cohort				
COMMUNITY HEALTH						
Home Health Care	See Attachment for Community Health Staffing Criteria		0	14.3*	71.4*	14.3*
General Home Visits			0	14.3*	85.7*	0
School Health Nursing	13.14*	24.7*	0	14.3*	85.7*	0
Occupational Nursing	2.48	2.48	0	14.3*	85.7*	0
Health Clinics						
Health Dept.	.95	1.43	0	14.3*	71.4*	14.3*
Mental Health Clinics	4.16*	5.83*	0	60*	40*	0
	R.N./Facility	R.N./Facility				
Primary Care Centers	1*	1*	0	100*	0	0

Field of Employment	Criteria for Staffing Lower Bound	 Upper Bound	Criteria for R.N. Educational Preparation DOC (%)	 MSN (%)	 BACC. (%)	 AD/DIP (%)
	Administrator/Institution (R.N.)					
NURSE ADMINISTRATORS						
Executive Nurse Administrator						
Psychiatric	4*		5	95	0	0
Long-term Acute Care	4*		5	95		
Short-term, Small, under 100-bed hospitals	3*		0	25*	75*	0
Short-term, 100-400 bed hospitals	5*		5	95	0	0
Short-term, large, over 400-bed or teaching hospitals	5*		5	95	0	0
All Skilled and Intermediate Care Facilities	1*		0	25*	75*	0
Community Health	1*		5	95	0	0
	R.N./10DCC R.N.	R.N./10 DCC R.N				
Mid level Nurse Supervisor						
Psychiatric	1*	Same	0	25	75	0
Long-term Acute Care	1*	Same	0	25	75	0
Short-term, small, under 100-bed hospitals	1*	Same	0	25	75	0
Short-term, 100-400 bed hospitals	1.6*	Same	0	25	75	0
Short-term, large, over 400-bed or teaching hospitals	2.0*	Same	0	25	75	0

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Field of Employment	Criteria for Staffing Lower Bound	Upper Bound	DOC (%)	Criteria for R.N. Educational Preparation MSN (%)	BACC. (%)	AD/DIP (%)
	Faculty/10 FTE Students	Faculty/10 FTE Students				
SCHOOLS OF NURSING						
Faculty						
Doctoral	1.67	2.5	100	0	0	0
Master's Degree	1.67	2.5	75	25	0	0
Baccalaureate Degree	1.25	1.67	20	80	0	0
Associate Degree	1.00	1.25	10	90	0	0
Diploma	1.00	1.25	10	90	0	0
Practical Nurse	1.00	1.25	0	60	40	0
	Administrator/10 Faculty					
Administrators						
Doctoral	1*		100	0	0	0
Master's Degree	1*		100	0	0	0
Baccalaureate Degree	1*		100	0	0	0
Associate Degree	1*		25	75	0	0
Diploma	1*		25	75	0	0
Practical Nurse	1*		0	100	0	0
	R.N.'s/10 DCC R.N.'s	R.N.'s/10 DCC R.N.'s				
RESEARCHERS AND CONSULTANTS	.10	.20*	50	50	0	0

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	Criteria for Staffing		Criteria for R.N. Educational Preparation			
Field of Employment	Lower Bound	Upper Bound	DOC (%)	MSN (%)	BACC. (%)	AD/DIP (%)
	R.N./Institution	R.N./Institution				
NURSING STAFF DEVELOPMENT						
Large, over 400-bed or teaching hospitals	5*	6*	0	67*	33*	0
300-399 beds	4*	5*	0	50*	50*	0
200-299 beds	3*	4*	0	50*	50*	0
100-199 beds	2*	3*	0	33*	67*	0
Less than 100 beds	1*	2*	0	25*	75*	0
	R.N./10,000 population	R.N./10,000 population				
HEALTH RELATED ORGANIZATIONS	.4	.5	10	90	0	0
PRIVATE DUTY	1	.9	0	0	20	80

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*Denotes a staffing ratio or educational vector changed in the Kentucky Nursing Manpower Requirements Model from the WICHE Model.

**Adapted from the WICHE Model.

ATTACHMENT TO TABLE 6 - COMMUNITY HEALTH STAFFING RATIOS:
Home Health Care and General Home Visits

I. Home Health Care

Basis: Hospital discharge follow-up and an alternative to nursing home care.

Staffing:

a. Total population

LOWER BOUND - .65 R.N./10,000 population
UPPER BOUND - .98 R.N./10,000 population

b. Population 65 years and older

LOWER BOUND - 2.29 R.N./10,000 population 65 and older
UPPER BOUND - 3.44 R.N./10,000 population 65 and older

II. General Home Visits

Basis: Persons in indefinable high risk groups

Staffing:

a. Births without prenatal care

LOWER BOUND - 2.14 R.N./number of births
UPPER BOUND - 3.00 R.N./number of births

b. Post neonatal infant deaths (deaths ages one month-one year)

LOWER BOUND - 23.90 R.N.'s/number of post neonatal infant deaths
UPPER BOUND - 33.27 R.N.'s/number of post neonatal infant deaths

c. High risk and other follow-up

LOWER BOUND - 2.38 R.N./10,000 births
UPPER BOUND - 3.33 R.N./10,000 birhts

d. Other morbidity, persons under age 17

LOWER BOUND - 1.19 R.N./10,000 population under age 17
UPPER BOUND - 1.67 R.N./10,000 population under age 17

e. Active T.B. and Hepatitis

LOWER BOUND - .07 R.N./10,000 population
UPPER BOUND - .10 R.N./10,000 population

f. Chronic illness - ages 17 and older

LOWER BOUND - 1.19 R.N./10,000 population age 17 and older
UPPER BOUND - 1.67 R.N./10,000 population age 17 and older

g. Environmental visits

LOWER BOUND - .03 R.N./10,000 population
UPPER BOUND - .04 R.N./10,000 population

Staffing projections in the Kentucky model do not include the position of nursing aide. Although it is known that "certified aides" are used for nursing care in long-term care facilities, there is some indication that federal support for training nursing aides may be discontinued. Licensed practical nurse positions are included in the model, with staffing projections based on a LPN/direct client care RN basis.

Nurse anesthetists have also been excluded from the model, primarily because of the lack of a valid method for projecting requirements. The Kentucky TAG speculated that projections for nurse anesthetist requirements could be made on the basis of number of cases or number of physician anesthesiologists, if that cumulative data were available. (It should be noted that in the comparisons of nursing manpower requirements with nursing manpower supply for 1981, the number of registered nurse anesthetists employed in Kentucky has not been deducted from the total district/state supply of registered nurses.)

It is again emphasized that the staffing ratios proposed in the Kentucky Nursing Manpower Requirements model are average estimates. The staffing of positions is dependent upon patient needs, but also upon the philosophical approach of the institution towards the provision of nursing care. Should one system for patient care classification be used within a state's health care delivery system, a more definitive set of staffing criteria might be formulated.

E. Educational Vectors

The educational vector concept applies only to registered nurses (RNs). Staffing projections for registered nurses as illustrated in Table 5 appear first in terms of a ratio of the number of RNs per given variable. The number of nurses projected, as calculated for the ratio, is then converted into the percentage of those nurses, by educational level, appropriate for that particular setting, service and position. Nursing educational levels include the hospital diploma/associate degree, baccalaureate degree, master's degree and doctoral degree which represent the range of registered nurse practice from basic preparation to advanced and specialized preparation. In determining the educational vector percentages, decisions for the Kentucky model were based on type of institution, complexity of services and roles, and the level of nurse preparation currently represented in the nursing education system.

CHAPTER 4

Components of the Model by Employment Setting: Staffing Criteria and Criteria for RN Educational Preparation

The data presented in this chapter follow the same sequence of order as that presented in Table 5, but with an explanation of the basis for staffing criteria and RN educational preparation criteria and, information regarding facilities classification. Staffing criteria and criteria for RN educational preparation specific to each facility classification are presented under facility headings. In some facility or service categories, the basis for staffing criteria as proposed by the Kentucky TAG or their consultants had to be converted to a different form for calculation purposes. When a conversion has been necessary, the basis for staffing criteria is noted in the table. A detailed explanation of the procedure used to convert the basis for staffing criteria is included in the Appendix under "Staffing Ratio Calculations." The reader is reminded that staffing criteria are based on the condition that it takes 4.9 FTE registered nurses (RNs) to provide one RN per shift per year for a 24-hour period. All criteria and resulting requirements are projections for full-time equivalent (FTE) nursing personnel. The type and complexity of nursing care indicated influences both the number of nurses needed and the educational preparation of those nurses.

I. Direct Client Care Nursing Personnel

Direct client care nursing personnel are primarily registered nurses usually classified as "staff" nurses and licensed practical nurses who assist them. These are the personnel who provide the bulk of direct patient care in hospitals, long-term care facilities and other patient care settings in the community. In all direct client care nursing requirements projected in the Kentucky model, the educational preparation for staff nurses is at the diploma/ associate degree and baccalaureate degree levels. Inclusion of a master's degree-prepared nurse in projected requirements for direct client care personnel means that a registered nurse in a clinical specialist role is recommended to work with staff nurses in providing direct client care.

A. Inpatient Services

This facility classification refers to hospitals and their acute care services. With the exception of the three federal hospitals (Army and Veterans' Administration), all hospitals in Kentucky are accounted for in the requirements projections. The reader is advised, however, that federal hospitals are not required to be licensed by the state in which they are located, nor to submit data regarding services or employees for utilization review at the state level. By the same token, nursing personnel employed in federal hospitals are not required to be licensed to

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practice in that state, although they must hold an active license in at least one state within the United States. Since federal hospitals are not required by the State to report the number of registered nurses and practical nurses in their employ, only those personnel licensed in Kentucky are accounted for in current manpower supply data. Manpower supply data are part of the data base used in projecting future nursing manpower supply; therefore, because of the inclusion of Kentucky-licensed nurses employed in federal hospitals in Kentucky, the projected future nursing manpower supply (resources) for non-federal nursing employment may be slightly over-estimated.

1. Long-Term Acute Care Hospitals:

Three distinct categories of this type of facility were identified by the Kentucky TAG: psychiatric, orthopedic/rehabilitation, and intermediate care/mental retardation. Nursing manpower requirement projections for these facilities are made at the state level only, since the facilities are limited in number and are intended to serve the population statewide. (For non-specialty-type hospitals, psychiatric and orthopedic services are classified as acute care and included with other acute care services in those institutions.)

Staffing criteria and criteria for RN educational preparation for long-term acute care hospitals are presented in Table 6.

Table 6

DIRECT CLIENT CARE: INPATIENT SERVICES
Long-Term Acute Care Hospitals:
Criteria for Nurse Staffing and RN Educational Preparation

	Staffing Criteria		RN Staffing Ratio		Criteria for RN Educational Preparation		
Facility	Lower	Upper	BSN:ADN/DIP	%DOC	%MSN	%BSN	%DIP/ADN
Psychiatric							
RNs per 100 patients	13.0	22.0	1:.69	0	15.4	50.0	34.6
LPNs per 10 DCC RNs	7.7	4.5					
Orthopedic/Rehabilitation							
RNs per 100 patients	49	76	1:1	0	7.9	46.05	46.05
LPNs per 10 DCC RNs	11	11					
BASIS FOR STAFFING: 4 to 6 RNs per 30 patients for the day and evening shifts, 1 to 2 RNs per 30 patients on the night shift. 1 LPN for every RN on the day and evening shifts, and 2 LPNs for every RN on the night shift.							
Intermediate Care/Mental Retardation							
RNs per 100 patients	19.6	24.5	1:2	0	0	33.33	66.67
LPNs per 10 DCC RNs	20	10					
BASIS FOR STAFFING: 4 to 5 RNs per 100 patients 24 hours a day. 2 to 1 LPNs for every RN 24 hours a day.							

2. Short-Term Acute Care Hospitals:

Short-term acute care is defined as less than a thirty-day stay for the patient. The majority of hospitals in Kentucky qualify as short-term acute care hospitals. These facilities are classified into three types: small, under 100 beds; medium hospitals having 100 to 400 beds; and large, over 400 beds plus teaching hospitals (which may be of lesser size).

Small hospitals account for 56 percent of all short-term acute care hospitals in Kentucky. Calculations for nursing manpower requirements have been based on the occupancy rate for all beds, even though the small hospital may have intensive care units, newborn units and extended care units, each of which may be staffed differently than general acute care units. The criteria for RN educational preparation is based on the recognition that staff nursing responsibilities in a small hospital can vary widely in terms of complexity and decision-making with limited access for the nurse to expert guidance and assistance. The small rural hospital is central to the community's need for emergency and acute nursing care, and may place more extensive demands upon its nursing staff than does its counterpart in metropolitan areas.

Hospitals having 100 or more beds are subdivided for staffing requirements into three services: newborn, general acute care and critical care units. The inclusion of specialty units such as psychiatric, pediatric and orthopedic in the category of general acute care obscures the reality of staffing requirements for specialized types of care. However, utilization data of this type for Kentucky hospitals is not available.

Extended care beds in hospitals were also placed in the category of general acute care since the number of beds referenced did not appear to be significant to overall nurse requirement calculations.

The critical care category refers to 24-hour continuous care of greater complexity than acute care, and, at the state level includes neonatal intensive care. The increase in technology in critical care nursing is requiring more knowledgeable assistance for critical care registered nurses. The Kentucky TAG noted that in some hospitals in the State, nursing aides are being replaced by licensed practical nurses to feed patients and perform other comparable activities, but under the direct supervision of the registered nurse. However, the Kentucky TAG recognized the tendency to use "experienced" licensed practical nurses beyond their level of preparation, and chose to omit this level of nursing personnel in calculating staffing for critical care units.

Staffing information for short-term acute care hospitals is presented in Table 7.

Table 7

DIRECT CLIENT CARE: INPATIENT SERVICES
Short-Term Acute Care Hospitals:
Criteria for Nurse Staffing and RN Educational Preparation

	Staffing Criteria		RN Staffing Ratio	Criteria for RN Educational Preparation			
Facility	Lower	Upper	BSN:DIP/ADN	%DOC	%MSN	%BSN	%DIP/ADN
UNDER 100 BEDS							
All bed types							
RN per 100 patients	49	56.9	1:4	0	5.0	19.0	26.0
LPN per 10 DCC RNs	2.4	2.1					
100-400 BEDS							
Newborn Unit							
RN per 100 patients	49	56.5	1:3	0	5.8	23.55	70.65
LPN per 10 DCC RNs	2.4	2.1					
Gen. Acute Care							
RN per 100 patients	49	56.5	1:3	0	5.8	23.55	70.65
LPN per 10 DCC RNs	2.4	2.1					
Critical Care							
RN per 100 patients	250	300	1:2	0	5.8	31.4	62.8
LPN per 10 DCC RNs	0	0					
BASIS FOR STAFFING: 1 to 1.2 RNs for every 2 patients							
400+ BEDS/TEACHING							
Newborn Unit							
RN per 100 patients	49	56.5	1:3	0	7.4	23.15	69.45
LPN per 10 DCC RNs	2.4	2.1					
Gen. Acute Care							
RN per 100 patients	49	56.5	1:3	0	7.4	23.15	69.45
LPN per 10 DCC RNs	2.4	2.1					
Critical Care							
RN per 100 patients	300	350	1:.99	0	7.4	30.87	61.73
LPN per 10 DCC RNs	0	0					
BASIS FOR STAFFING: 1.2 to 1.4 RNs for every 2 patients.							

B. Other Hospital Services

Three types of services are included in this category: surgical (referring to minor and major surgical operations performed in operating rooms), emergency room visits, and outpatient clinic visits. Outpatient visits as reported in Kentucky include non-nursing services such as x-ray and laboratory, and may also include primary care. However, in calculating nursing manpower needed, the base ratio of RNs per number of visits were used for outpatient clinics. Again, the estimated staffing criteria for all three types of services categorized as "Other Hospital Services" represent average criteria. It should be noted that staffing ratios presume that a registered nurse will be used for each and every service. Staffing criteria are illustrated in Tables 8, 9, and 10.

Table 8

DIRECT CLIENT CARE: OTHER HOSPITAL SERVICES
Surgical (Operating Rooms):
Criteria for Nurse Staffing and RN Educational Preparation

Facility	Staffing Criteria Lower	Staffing Criteria Upper	RN Staffing Ratio BSN:DIP/ADN	Criteria for RN Educational Preparation %DOC	%MSN	%BSN	%DIP/ADN
Surgical							
RN per 1000 operations	1.5	1.8	0:1	0	0	0	100
LPN per 10 DCC RNs	0	0					

BASIS FOR STAFFING: 3 to 2.5 operations per RN per shift.

Table 9

DIRECT CLIENT CARE: OTHER HOSPITAL SERVICES
Emergency (Room):
Criteria for Nurse Staffing and RN Educational Preparation

Facility	Staffing Criteria Lower	Staffing Criteria Upper	RN Staffing Ratio BSN:DIP/ADN	Educational Vector %DOC	%MSN	%BSN	%DIP/ADN
Emergency							
RN per 1000 services	.22	.44	1:1	0	4.8	47.6	47.6
LPN per 10 DCC RNs	5.0	5.0					

BASIS FOR STAFFING: 20 to 10 services per shift.

Table 10

DIRECT CLIENT CARE: OTHER HOSPITAL SERVICES
Out-Patient Clinics:
Criteria for Nurse Staffing and RN Eductional Preparation

Facility	Staffing Criteria Lower	Staffing Criteria Upper	RN Staffing Ratio BSN:DIP/ADN	Criteria for RN Educational Preparation %DOC	%MSN	%BSN	%DIP/ADN
Out-Patient Clinics							
RN per 1000 services	.15	.24	1:0.12	0	14.3	76.2	9.5
LPN per 10 DCC RNs	10.0	10.0					

BASIS FOR STAFFING: 30 to 18.5 services per shift per RN 1:1 LPN:RN ratio

C. Long-Term Care Facilities

The term "nursing home" has generally been used to identify the non-hospital free-standing type of facility which provides skilled and intermediate care nursing. In the Kentucky nursing manpower requirements model there are two classifications for long-term care facility beds identical to the classifications officially used in Kentucky for reporting bed utilization: skilled nursing/nursing home beds and intermediate care beds. It should be noted, however, that staffing for nursing home bed patients may differ in actual need from staffing for skilled nursing bed patients. In long-term care facilities, the classification "skilled nursing" refers to bedside nursing care on a 24-hour basis of a level more complex than "intermediate care." In contrast, "personal care homes" which are residential in nature but also provide long-term care are not licensed to provide nursing care and have therefore been omitted in the Kentucky nursing manpower requirements model.

In considering the patient population of long-term care facilities, the Kentucky TAG recognized that not all patients are 65 years of age and older. However, it was determined that the number of patients under age 65 was not significant to the total population cohort of age 65 and over for nursing manpower requirement projections.

In considering staffing for long-term care facilities, the Kentucky TAG viewed the needs for the skilled nursing care classification differently than what is required by federal regulations. These regulations state that there must be one registered nurse in the Head Nurse position on the day shift every day for every 48 patients, and licensed practical nurses may serve as Head Nurses on the evening and night shifts. It was the opinion of the Kentucky TAG that there should be 24-hour registered nurse coverage, regardless of the number of patients. Tables 11 and 12 illustrate the staffing criteria formulated for long-term care facilities.

Table 11

DIRECT CLIENT CARE: LONG-TERM CARE FACILITIES
Skilled Nursing/Nursing Home Beds:
Criteria for Nurse Staffing and RN Education Preparation

Facility	Staffing Criteria Lower	Staffing Criteria Upper	RN Staffing Ratio BSN:DIP/ADN	Criteria for RN Educational Preparation %DOC	%MSN	%BSN	%DIP/ADN
SN/NH Beds							
RN per 100 patients	5.39	12.25	1:3	0	0	25	75
LPN per 10 DCC RNs	6.7	6.7					

BASIS FOR STAFFING: 1 to 2.5 RNs per shift, 24 hours a day plus 10-15% more for nursing home beds.

Table 12

DIRECT CLIENT CARE: LONG-TERM CARE FACILITIES
Intermediate Care:
Criteria for Nurse Staffing and RN Educational Preparation

Facility	Staffing Criteria Lower	Staffing Criteria Upper	RN Staffing Ratio BSN:DIP/ADN	Educational Vector %DOC	%MSN	%BSN	%DIP/ADN
Intermediate Care							
RN per 100 patients	4.9	8.1	1:6	0	0	14.29	85.71
LPN per 10 DCC RNs	30	30					

BASIS FOR STAFFING: 1-2 RNs per shift, day and evening shifts, 1 RN per shift on night shift.

D. Physicians' Offices

Projections for this category of direct client care are based on the criteria proposed in the WICHE model. However, it has been noted that in some physicians' offices in Kentucky, nursing personnel are being replaced with medical

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assistants -- individuals trained to perform some nursing tasks as well as clerical tasks. At this point in time there are limited data to document the number and type of nurses needed in the average physician's office. Table 13 illustrates criteria for staffing and RN educational preparation for physicians' offices.

Table 13

DIRECT CLIENT CARE: PHYSICIANS' OFFICES
Criteria for Nurse Staffing and RN Educational Preparation

	Staffing Criteria		RN Staffing Ratio	Educational Vector			
Facility	Lower	Upper	BSN:DIP/ADN	%DOC	%MSN	%BSN	%DIP/ADN
MD Offices							
RN per 10 MDs	2.0	2.2	1:2	0	25	25	50
LPN per 10 DCC RNs	3.0	2.0					

E. Community Health

This category of direct client care nursing services is inclusive of the broad public/community health nursing field, but has been subdivided into specialized areas of service for projection purposes. The staffing methodology proposed in the WICHE model has been retained in the Kentucky model, except for three service areas: mental health clinics, school health nursing and primary care centers. (The reader is reminded that educational preparation for beginning practice in public/community health nursing is at the baccalaureate degree level.) Staffing criteria for public/community health nursing is illustrated in Table 14.

Table 14

DIRECT CLIENT CARE: COMMUNITY HEALTH
Criteria for Nurse Staffing and RN Educational Preparation

Service	Staffing Criteria		RN Staffing Ratio	Criteria for RN Educational Preparation			
	Lower	Upper	BSN:DIP/ADN	%DOC	%MSN	%BSN	%DIP/ADN
1. Home Health Care							
a. (Total Population)							
RN per 10,000 population cohort	.65	.98	1:0.2	0	14.3	71.4	14.3
LPN per 10 DCC RNs	2.0	1.4					
b. (Persons 65 years and over)							
RN per 10,000 population cohort	2.29	3.44	1:0.2	0	14.3	71.4	14.3
LPN per 10 DCC RNs	2.0	1.4					
2. General Home Visits*							
a. (Live Births)							
RN per 10,000 population cohort	4.52	6.33	1:0	0	14.3	85.7	0
b. (Infant Deaths)							
RN per 10,000 population cohort	23.90	33.27	1:0	0	14.3	85.7	0
c. (Under 17 years)							
RN per 10,000 population cohort	1.29	1.81	1:0	0	14.3	85.7	0
d. (17 years and over)							
RN per 10,000 population cohort	1.29	1.81	1:0	0	14.3	85.7	0
3. School Health*							
RN	13.14	24.7	1:0	0	14.3	85.7	0
BASIS FOR STAFFING: 1 RN for every 400-750 students.							
4. Occupational Nursing*							
RN	2.48	2.48	1:0	0	14.3	85.7	0
BASIS FOR STAFFING: 1 RN for every 500 employees.							
5. Health Clinics							
a. Health Departments							
RN per 10,000 pop.	.95	1.43	1:0.2	0	14.3	71.4	14.3
LPN per 10 RNs	1.0	1.0					
b. Mental Health*							
RN per 10,000 pop.	4.16	5.83	1:0	0	60	40	0
BASIS FOR STAFFING: 7 to 5 mental health clinic visits per RN per day.							

*LPNs are omitted in this service category.

The Kentucky TAG discovered that there is very little information available regarding the types and numbers of nursing personnel actually required in primary care centers in Kentucky or the number of patient visits. In view of the expanding development of primary care centers in the State, the decision was made to project the number of family nurse practitioners required based on the ratio of one nurse practitioner per primary care setting. The group recognized that this method of projecting nurse requirements overlooked the use of other types of nursing personnel needed in primary care centers as well as the fact that nurse practitioners provide primary care services in other practice settings. Consequently, the staffing criteria illustrated in Table 15 are limited to nurse practitioners for primary care centers.

Table 15

DIRECT CLIENT CARE: PRIMARY CARE CENTERS
Criteria for Nurse Staffing and RN Educational Preparation

Facility	Staffing Criteria Lower	 Upper	RN Staffing Ratio BSN:DIP/ADN	Criteria for RN Educational Preparation %DOC	 %MSN	 %BSN	 %DIP/ADN
Primary Care Centers							
RN per center	1.0	1.0	0:0	0	100	0	0

II. Nurse Administrators

This position category has been divided into two classifications: executive nurse administrators and mid-level supervisors. Executive nurse administrators include the chief nurse administrator and first-line assistant(s): the director and assistant director(s) of nursing service in hospitals and other direct client care practice settings, and, the dean/director and associate/assistant deans/directors in schools of nursing. Mid-level nurse supervisors include supervisors, coordinators and head nurses who have 24-hour responsibility for continuity of patient care in service areas.

Decisions regarding the educational preparation of nurse administrators for patient care facilities were perhaps the most difficult to resolve. Neither the Kentucky TAG nor the Subcommittee on Nursing Education were in complete agreement within or between groups. There was general acknowledgement that many nurses have successfully served in nursing administrative positions with less than graduate level preparation in nursing administration. By virtue of the predominance of hospital diploma education and delayed focus upon the specific skills and knowledge associated with nursing administration, graduate level education in nursing has not universally emerged as the accepted route to administrative positions in nursing service practice settings. Rather, individual qualities, experience and ability to practice nursing have traditionally been key criteria for appointment to administrative positions. (This practice has undoubtedly been influenced by the lack of educationally-prepared applicants as well as economic conditions. According to 1981 Kentucky licensure data, approximately 96 per cent of all nurses in nursing service administrative positions do not hold a graduate degree in nursing.)

On the other hand, there was also acknowledgement that the Kentucky model for projecting nursing manpower requirements was intended to cast future requirements, preparation for which could be addressed now and in the intervening years by the nursing education system. From this perspective use of the nursing education system as a base for nursing manpower preparation decisions was indicated, just as it was for all other position decisions within the requirements model. In today's system of nursing education, the advanced knowledge and skills identified with nursing administration, such as organizational management, budgeting and planning strategies, are offered in master's and doctoral degree level programs. Beginning skills in the management process are introduced at the baccalaureate degree level. Although non-credit continuing education offerings can be a resource for gaining administrative knowledge, from a time perspective they are not as comprehensive as a degree-oriented academic program.

With less than full consensus between the Kentucky TAG and the Subcommittee members, the educational preparation decisions for nurse administrator positions were made and are reported in Tables 16 and 17. (Educational nurse administrative positions are reported in Table 18 under Schools of Nursing.)

Table 16

NURSE ADMINISTRATOR: Executive Nurse Administrator Criteria for Nurse Staffing and RN Educational Preparation

Facility	Staffing Criteria	Criteria for RN Educational Preparation %DOC	%MSN	%BSN	%DOC/ADN
Psychiatric Hospital					
RN Administrator per facility	4	5	95	0	0
Long-term Acute Care Hospital					
RN Administrator per facility	4	5	95	0	0
Short-term, Under 100-Bed Hospitals					
RN Administrator per facility	3	0	25	75*	0
Short-term, 100-400-bed Hospitals					
RN Administrator per facility	5	5	95	0	0
Short-term, large, over 400-bed and Teaching Hospitals					
RN Administrator per facility	5	5	95	0	0
Skilled Nursing and Intermediate Care Facilities					
RN Administrator per facility	1	0	25	75*	0
Community Health					
RN per department	1	5	95	0	0

*BSN degree plus preparation in nursing administration through continuing education programs.

Table 17

NURSE ADMINISTRATOR: Mid-Level Supervisor
Criteria for Nurse Staffing and RN Educational Preparation

Facility	Staffing Criteria	Criteria for RN Educational Preparation %DOC	%MSN	%BSN	%DIP/AD
Psychiatric Hospital					
RN Supervisor per 10 DCC RNs	1	0	25	75	0
Long-term Acute Care					
RN Supervisor per 10 DCC RNs	1	0	25	75	0
Short-term, small under 100 Beds					
RN Supervisor per 10 DCC RNs	1	0	25	75	0
Short-term, 100-400 Beds					
RN Supervisor per 10 DCC RNs	1.6	0	25	75	0
Short-term, large, over 400 Beds and Teaching Hospitals					
RN Supervisor per 10 DCC RNs	2.0	0	25	75	0

III. Schools of Nursing

Standards and regulations which govern the qualifications for administrative and faculty positions in schools of nursing are the joint concerns of the national nursing accreditation agency (The National League for Nursing), the professional nursing association (The American Nurses' Association) and the State Boards of Nursing. In Kentucky, minimum qualifications for these positions are set forth in Kentucky Revised Statutes, KRS 314: Nurse Practice Act.

Projections have been made at the state level only, since schools of nursing serve the entire state population.

Tables 18 and 19 report the criteria for staffing and RN educational preparation for schools of nursing recommended in the Kentucky model. The reader is reminded that advanced preparation for academic teaching, i.e., curriculum development, teaching strategies, course planning and student guidance and evaluation, is offered at the master's and doctoral degree program levels. The basics of teaching, primarily germane to patient education, are introduced at the baccalaureate degree level.

Table 18

SCHOOLS OF NURSING: Administrators
Criteria for Nurse Staffing and RN Educational Preparation

Level of Nursing Program	Staffing Criteria	Criteria for RN Educational Preparation %DOC	%MSN	%BSN	%DIP/ADN
Doctoral Program					
RN Administrator per 10 faculty	1.0	100	0	0	0
Masters' Degree					
RN Administrator per 10 faculty	1.0	100	0	0	0
Baccalaureate Degree					
RN Administrator per 10 faculty	1.0	100	0	0	0
Associate Degree					
RN Administrator per 10 faculty	1.0	25	75	0	0
Hospital Diploma					
RN Administrator per 10 faculty	1.0	25	75	0	0
Practical Nursing					
RN Administrator per 10 faculty	1.0	0	100	0	0

Table 19

SCHOOLS OF NURSING: Faculty
Criteria for Nurse Staffing and RN Educational Preparation

Level of Nursing Program	Staffing Criteria Lower	Staffing Criteria Upper	Criteria for RN Educational Preparation %DOC	%MSN	%BSN	%DIP/ADN
Doctoral Program						
RN faculty per 10 FTE Students	1.67	2.5	100	0	0	0
Masters' Degree						
RN faculty per 10 FTE Students	1.67	2.5	75	25	0	0
Baccalaureate Degree						
RN faculty per 10 FTE Students	1.25	1.67	20	80	0	0
Associate Degree						
RN faculty per 10 FTE Students	1.00	1.25	10	90	0	0
Hospital Diploma						
RN faculty per 10 FTE Students	1.00	1.25	10	90	0	0
Practical Nursing						
RN faculty per 10 FTE Students	1.00	1.25	0	60	40	0

IV. Researchers and Consultants

Researchers and consultants serve special needs in the practice of nursing. Research in nursing may be directed toward any aspect of the nursing profession to document what is and/or to discover ways to improve the quality of practice. Consultation is a means of obtaining expert guidance in some aspect of nursing practice, be it clinical practice, education or administration. While the researcher may be based in a single institution or agency, the consultant (who may also be a researcher) more frequently has mobility among institutions and/or agencies. The work of researchers and consultants can lead to not only improved quality of patient care and aspects of nursing which directly or indirectly affect patient care, but also to problem-solving and cost containment ideas and knowledge for the health care delivery system.

In the belief that the need for researchers and consultants is not restricted to the state level, nursing manpower requirements have been calculated for each of the fifteen Area Development Districts and appear in Part B of this report. Following is Table 20 illustrating staffing criteria for nurse researchers and consultants.

Table 20

RESEARCHERS AND CONSULTANTS
Criteria for Nurse Staffing and RN Educational Preparation

	Staffing Criteria		Criteria for RN Educational Preparation			
	Lower	Upper	%DOC	%MSN	%BSN	%DIP/ADN
RN Researcher/Consultant per 10 DCC RNs	.10	.20	50	50	0	0

V. Nursing Staff Development

Nursing staff development programming has traditionally focused upon two areas of staff training in patient care settings: orientation and inservice education of employees. In Kentucky, the legislation of mandatory continuing education for relicensure of registered nurses and practical nurses has prompted some hospitals to include continuing education programming in staff development planning.

By broad definition in nursing parlance, orientation and inservice education are directed towards providing nurse employees in a given institution the opportunity to gain the knowledge and skills necessary to perform their jobs in that practice setting. In contrast, continuing education is directed towards assisting the nurse to maintain and expand his/her nursing competencies. Orientation and inservice education programs are the sole province of the institution, whereas continuing education programming requires the approval of the State Board of Nursing for nurse relicensure purposes.

In deference to the possible inclusion of continuing education programs with institutional planning for orientation and inservice education, all three areas of employee education have been included in the term: nursing staff development. Although staff development programming is appropriate for all health care agencies, staffing criteria and resultant requirement projections for nurses in staff development positions have been made only for hospital facilities, illustrated in Table 21. The Kentucky TAG reasoned that a consortium arrangement for providing staff development programming could be an alternative for long-term care facilities, community health agencies, and for small hospitals in instances where a specific in-house staff development position could not be established.

Table 21

NURSING STAFF DEVELOPMENT: Hospitals
Criteria for Nurse Staffing and RN Educational Preparation

Facility	Staffing Criteria		Criteria for RN Educational Preparation			
	Lower	Upper	%DOC	%MSN	%BSN	%DIP/ADN
Large, over 400 Beds and Teaching						
RN per institution	5	6	0	67	33	0
300-399 Beds						
RN per institution	4	5	0	50	50	0
200-299 Beds						
RN per institution	3	4	0	50	50	0
100-199 Beds						
RN per institution	2	3	0	33	67	0
Less than 100 Beds						
RN per institution	1	2	0	25	75	0

VI. Health Related Organizations

This category refers to organizations that address health/ nursing concerns and issues as well as the regulation of nursing practice, i.e., professional associations, regional planning groups, health agencies and the State Board of Nursing. Requirement projections have been made for the state level only. Table 22 illustrates the criteria.

Table 22

HEALTH RELATED ORGANIZATIONS
Criteria for Nurse Staffing and RN Educational Preparation

	Staffing Criteria		Criteria for RN Educational Preparation			
	Lower	Upper	%DOC	%MSN	%BSN	%DIP/ADN
RN per 10,000 population	.4	.5	10	90	0	0

VII. Private Duty

There is very limited information regarding the utilization of private duty nurses. Kentucky nurse licensure data shows a slight decrease over a three-year period, 1979-81, in the number of registered nurses and licensed practical nurses working as private duty nurses. Many factors could account for this trend. The Kentucky TAG accepted the WICHE criteria for staffing, as well as that group's assumption that as the quality of patient care increased, the demand for private duty nurses would decrease. This assumption is reflected in the upper bound staffing criteria in Table 23.

Table 23

PRIVATE DUTY NURSING
Criteria for Nurse Staffing and RN Educational Preparation

	Staffing Criteria		Criteria for RN Educational Preparation			
	Lower	Upper	%DOC	%MSN	%BSN	%DIP/ADN
RN per 10,000 population	1.0	.9	0	0	20	80

The summary of all criteria for nurse staffing and criteria for RN educational preparation appears in Table 5.

PART B

Nursing Manpower Resources

Chapter 5

Resource Model Components

I. INTRODUCTION

Part B of this study addresses the nursing manpower resources of Kentucky--the supply of nurses known to be available and the supply that is expected to be available in the future--the means by which estimates of future manpower supply were obtained, and comparisons of nursing manpower requirements with resources for the years 1981 and 1985. Whereas the Requirements phase of the study projects the types and numbers of nurses needed in different practice settings and positions, the Resource phase of the study indicates the types and numbers of nurses which were actually available in 1981, and, those which will probably be available in 1985 assuming certain manpower trends continue.

Nursing manpower requirements were estimated for 1981 because the actual number of licensed nurses employed in nursing in Kentucky was available for indepth comparison with current requirements. This comparison of nurse requirements and nurse supply, presented in Chapter 6 of this report, provides a detailed examination of nursing manpower by practice setting, position and R.N. educational level for the state and for each of the fifteen Area Development

Districts. In contrast, while the nursing manpower requirements estimated for 1985 are also presented in detail, the manpower resources for 1985 are calculated for the total number of nurses, by educational level, expected to be available in the State and in each of the Area Development Districts.

The 1981 requirements/resources report shows the most recent status, according to available data, of the nursing manpower picture in Kentucky. In turn, the 1985 report serves as a base for evaluating the differences between nursing manpower in 1985 and nursing manpower estimated for 1985. Subsequent manpower planning strategies reasonably should aim for an alteration of those trends that are counterproductive to the achievement of a nursing manpower requirements/resources balance.

II. NURSE LICENSURE

An annual analysis of nurse licensure data has been done as part of the overall Nursing Project and in cooperation with the Kentucky State Board of Nursing. Begun in 1977, the computerized model for analysis was revised over the following two years, resulting in a comprehensive analysis of nurse licensure data for the years 1979 through 1981. These data, reported annually by all nurses seeking or maintaining licensure in Kentucky, include many variables essential to nurse manpower planning.

The nurse licensure regulations in Kentucky permit a choice of inactive or active licensure status. To be employed in nursing, however, the nurse must have active licensure status as well as meet the requirements for continuing education. In using nurse licensure records as a manpower data source, several points should be noted:

- Nurse licensure data is self-reported and not routinely validated, but assumed to be correct.
- All nurses holding licensure in Kentucky are not necessarily on active status.
- All Kentucky-licensed nurses having active status are not necessarily employed in nursing.
- All Kentucky-licensed nurses on either active or inactive status do not necessarily reside in or near Kentucky.

In other words, nursing licensure in Kentucky is not synonymous with current or potential employment in nursing in Kentucky. This point is illustrated in Table 24.

Kentucky licensure data include five broad categories of information about the individual practical nurse and registered nurse:

1. Personal: Age, Sex, Marital Status, Race, Social Security Number.
2. Licensure Status: Active, Inactive.
3. Demographic: Home State, District, County.
4. Education: Basic Educational Preparation (level of program preparing for initial licensure), school and year of graduation; highest educational level attained.
5. Employment: Employment Status, Employment State, District, County; Field of Employment (in Nursing); Place of Employment, Position, Major Clinical Area.

Table 24

Status of Registered Nurses
Licensed in Kentucky
July 1981

Status	Headcount	Percent
Total Number of RNs Licensed in Kentucky	25,354	100%
Active Licensure Status:		
Employed full-time in nursing in Kentucky	11,589	45.71
Employed part-time in nursing in Kentucky	3,500	13.80
Employed in non-nursing field in Kentucky	218	0.86
Employed outside of Kentucky but live in Kentucky	2,271	8.96
Employed and live outside of Kentucky	3,577	14.11
Unemployed, or employment status unknown	271	1.07
Subtotal	21,426	
Inactive Licensure Status:		
Live in Kentucky	1,740	6.86
Live outside of Kentucky	2,188	8.63
Subtotal	3,928	
Total	25,354	100%

The variables used to estimate nursing manpower resources are those which focus on employment in Kentucky and the highest educational level attained by the individual registered nurse.

The period of 1979-81 reflects an annual increase of approximately 1000 active licensed registered nurses in the total active manpower pool for a net increase of 2,042 RNs. The majority of these nurses are employed in nursing (Table 25). However, in terms of full-time equivalency, the net increase of registered nurses employed in nursing is 1,617.

Table 25

Employment Status
of
Active Licensed Registered Nurses in Kentucky
1979-81

Status	Year 1979	1980	1981	% Change 1979-81
Full-Time in Nursing	10,277	10,093	11,589	+1%
Part-Time in Nursing	2,890	3,163	3,500	+21%
Unemployed	161	205	237	+47%
Employed in Non-Nursing Field	164	202	218	+33%
Unknown	44	42	34	-23%
TOTAL	13,536	14,515	15,578	

In terms of educational program levels, greater numbers of registered nurses are reporting attainment of baccalaureate and higher degrees in nursing. Although the majority of nurses continue to report the diploma/associate degree preparation as their highest educational level attained, there has been a percentage decrease of nurses at this level from 1979 through 1981, as illustrated in Table 26.

Although three years is a limited time period upon which to base planning decisions, a resource projection model for nursing manpower planning is highly dependent upon historical data. While the data regarding nursing manpower employment in Kentucky since 1979 may not be considered sufficient to document trends, they do indicate growth in the manpower pool and shifts in the employment status of registered nurses in Kentucky, all of which should be considered in the light of requirement projections for nurses, educational programming and employment practices.

Table 26

Highest Educational Level Attained of Active Licensed Registered Nurses Employed in Nursing in Kentucky 1979-81

	1979		1980		1981		% Change
Educational Level	FTE	%	FTE	%	FTE	%	1979-81
No Response	84.5	0.72	67.0	0.53	46.5	0.35	-45.0
Diploma	4871.0	41.55	4958.0	39.71	4992.5	37.42	+2.5
Associate Degree	3973.0	33.89	4442.5	35.58	4960.0	37.18	+24.8
Baccalaureate in Nursing Degree	1967.5	16.78	2138.5	17.13	2322.0	17.40	+18.0
Baccalaureate Degree-Other	359.5	3.06	370.5	2.96	416.0	3.12	+15.7
Master's in Nursing Degree	295.5	2.52	314.0	2.51	372.5	2.79	+26.0
Master's Degree-Other	150.5	1.28	162.0	1.29	191.0	1.43	+26.9
Doctorate	20.5	0.17	32.0	0.25	38.5	0.29	+87.8
TOTAL	11,722.0		12,484.5		13,339.0		

III. NURSE GRADUATIONS

The use of nursing program graduations, both past and estimated future, as a base for projecting nurse manpower resources, is affected by the numerous changes which have occurred in Kentucky's educational system in recent years. Both practical nurse education and registered nurse education have been altered.

Hospital diploma programs have been declining in number over the past three decades, with an announced 1983 closing of the sole remaining hospital diploma nursing program in Kentucky. From 1975-80 the number of associate degree programs increased from 17 to 20, the generic baccalaureate degree programs remained five in number while five new baccalaureate degree programs for Registered Nurses were initiated. (Within the generic baccalaureate program group, one program closed, another opened, thus affecting estimated graduation data.) Master's degree level programs increased from one to two during this five-year period, while practical nurse programs remained the same in number.

Changes continued through 1981 and into 1982 with proposed openings, closings and off-campus extensions of various types of nursing programs, factors that affect the reliability of estimated future graduations.

Other factors influencing estimates of future graduations from nursing programs were revealed in 1980 and 1981 surveys of nursing programs in Kentucky. These surveys were conducted as a part of the Nursing Project and for each survey there was one hundred percent response from nursing programs offered in public and independent institutions. Survey findings indicated that several programs in the state had reached maximum student enrollment given their current resources, although this was not true for the majority of generic baccalaureate programs. Some programs reported difficulties in acquiring new faculty for various reasons: limited numbers of qualified applicants; budget limitations in attracting qualified faculty; geographical location of the educational institution.

Data regarding nursing graduations are illustrated in Table 27 and reflect a decrease in the total number of graduations since 1979. In assessing the pattern of graduation data as a base for nursing manpower planning, it should be noted that basic programs produce new nurses. This group of graduates usually accounts for the major proportion of increase in the total nursing manpower pool.

Table 27

NURSING GRADUATIONS
IN
KENTUCKY
1978-81*

	1978		1979		1980		1981	
	No. Prog.	No. Grads.	No. Prog.	No. Grads.	No. Prog.	No. Grads.	No. Prog.	No. Grads.
I. Basic Programs								
1. Diploma, ADN								
a. % Change	19	936	21	1028	21	961	21	989
				+9.8%		-6.5%		+2.9%
2. BSN								
a. % Change	5	356	5	372	4	284	4	221
				+4.5%		-23.6%		-22.2%
3. SUBTOTALS								
a. % Change		1292		1400		1219		1210
				+8.4%		-12.9%		-3.4%
II. Programs for Registered Nurses								
1. BSN (2-year)	2	34	2	62	3	113	4	136
a. % Change				+82.3%		+82.2%		+20.4%
2. MSN								
a. % Change	1	31	1	38	1	50	1	48
				+22.6%		+31.6%		-4.0%
III. Total Number of BSN Graduations		390		434		371		357
a. % Change				+11.3%		-14.5%		-3.7%
IV. Total Number of Graduations		1357		1500		1382		1394
a. % Change				+10.5%		-7.9%		-1.5%

*Note: Nursing programs that were in operation during this period of time but did not have graduating class are not accounted for in this Table.

SOURCE: Council on Higher Education. Higher Education Degrees Conferred, 1978, 1979, 1980, 1981.

IV. METHODOLOGY FOR PROJECTING NURSING MANPOWER SUPPLY

In this study, projections about the future supply of nurses for Kentucky employment are based on historical data regarding nurses in the work force and students graduating from nursing programs in the state. The resource model proposed by the WICHE study was modified for the Kentucky study by modifying the formula for calculating the net attrition rate.

Three sets of data were obtained for making nursing manpower resource projections:

1. Nursing resources from past years;
2. The number of nursing graduates from past years plus the projected number of future graduates; and,
3. The "net attrition adjustment"--a rate which measures the effect of various factors on the in- and out-migration of nurses in the work force.

These data were used to determine the headcount of nurses estimated to be available in a specified future year. However, the headcount of nurses had to be converted to a full-time equivalency number of nurses for comparison with nurse requirement projections. This conversion was based on the past distribution of nurses employed full-time and part-time in the nursing work force, with two part-time employed nurses considered equivalent to one full-time employed nurse--2 PT = 1 FTE.

Nursing resources refers specifically to those nurses licensed to practice in Kentucky and employed in nursing in Kentucky. Data from 1979, 1980 and 1981 were used in calculating the net attrition rate, while 1981 data were also used as the beginning year for making projections for 1985, (Table 28) the "future" year selected for the Kentucky study.

Table 28

NURSING MANPOWER RESOURCES
Projections
1985

	Headcount	FTE*
Licensed Practical Nurses	7,578	6,877.0
Registered Nurses:		
Associate Degree/Diploma	13,844	12,183.0
Baccalaureate	2,958	2,690.0
Higher Degree (MSN, Doctorate)	1,141	1,078.0
Total Registered Nurses	17,943	15,951

*FTE = full-time equivalent = two part-time personnel equal one full-time employee. Headcount projections were converted to FTE based on the following historical distribution (1979-1981) of the nursing workforce as full or part-time:

	FT	PT
LPN:	81.5%	18.5%
AD/Diploma:	76.0	24.0
Baccalaureate:	81.9	18.1
Higher Degree:	89.0	11.0

An additional factor based on the educational system was used in classifying the employed nurse manpower pool by educational level for resource calculation purposes. Diploma and associate degree nurses were counted in the same classification; nurses having a baccalaureate degree in a non-nursing discipline were also counted in the diploma/associate degree classification since the "BS-Other" educational level (reported in licensure data) is assumed to not be synonymous with the Baccalaureate of Science in Nursing degree. In contrast, nurses reporting the "MS-Other" degree level were counted with "MSN" (Master of Science in Nursing) degree nurses since there was less conviction that all "MS-Other" degrees reported in the licensure data were actually non-nursing degrees. This classification placement factor should be explored further in subsequent use of the Kentucky model for nursing manpower resource projections.

Nursing graduations refer to the number of individuals graduating from the various nursing education programs in Kentucky, ranging from practical nurse programs to master's degree programs for registered nurses. Data for 1979 through 1981 were used for calculating the net attrition rate, while estimates of graduations (obtained from nursing program administrators) from 1982 through 1984 were used in projecting graduations anticipated in 1985.

The net attrition adjustment is a cumulative measure of all the factors which affect the inflow and outflow of nurses in the work force. Some of these factors include migration of licensed nurses; license suspensions, lapses, revocations, failures; out-of-state graduations and inactive nurses.

The formula for the net attrition rate is:

$$NAt = \frac{St + 1 - St + Gt}{St}$$

where NAt = Net attrition rate for year t
St = Current work force in year t
$St + 1$ = Available work force in year $t + 1$
Gt = Graduations in year t

This net attrition rate, along with the actual supply of nurses in a beginning year and the projected number of nursing graduates for subsequent years, is used to estimate the number of nurses that will be available in future years.

Based on available data, it was possible to obtain an actual net attrition rate for the years 1979-80 and 1980-81. The average of these two rates was used as the net attrition adjustment for future years (1982 through 1985). A positive net attrition rate indicates that the number of nursing resources is increasing annually; a negative net attrition rate indicates that the number is decreasing.

A separate net attrition rate was calculated for licensed practical nurses (Table 29) and for each registered nurse educational level (Tables 30-32). According to the net attrition rates for the period 1979 through 1981, the supply of practical nurses, associate degree/diploma registered nurses and baccalaureate degree registered nurses is decreasing while the supply of registered nurses holding master's and doctoral degrees is increasing. Logically, the relative merits of the increase and decrease of the nurse supply must be weighed in relation to projected requirements.

Table 29

NURSING MANPOWER RESOURCES
Calculations for
Licensed Practical Nurses
1982-1985

	Net Attrition Rate	-3.85%
1981	Available Supply	6863
1981	Graduations: LPN	463
1982	Estimated Total Supply	7326
1982	Net Attrition Adjustment	-282
1982	Available Supply	7044
1982	Available Supply	7044
1982	Graduations: LPN	475
1983	Estimated Total Supply	7519
1983	Net Attrition Adjustment	-290
1983	Available Supply	7229
1983	Available Supply	7229
1983	Graduations: LPN	475
1984	Estimated Total Supply	7704
1984	Net Attrition Adjustment	-297
1984	Available Supply	7407
1984	Available Supply	7407
1984	Graduations: LPN	475
1985	Estimated Total Supply	7882
1985	Net Attrition Adjustment	-304
1985	Available Supply	7578 (Headcount)

(FT - 81.5%, PT - 18.5%)

FT - 7578 (.815) = 6176.0
PT - 7578 (.185) = 1402.0
FTE = 6877.0

Table 30

NURSING MANPOWER RESOURCES
Calculations for
Associate Degree/Diploma Registered Nurses
1982-85

	Net Attrition Rate:	-3.07%
1981	Available Supply	11866
1981	Graduations:	
	Associate Degree	+920
	Diploma	+100
	Less 86% Baccalaureate R.N. Graduates*	-148
1982	Estimated Total Supply	12738
1982	Net Attrition Adjustment	-391
1982	Available Supply	12347
1982	Available Supply	12347
1982	Graduations:	
	Associate Degree	+927
	Diploma	+100
	Less 86% Baccalaureate R.N. Graduates*	-153
1983	Estimated Total Supply	13221
1983	Net Attrition Adjustment	-406
1983	Available Supply	12815
1983	Available Supply	12815
1983	Graduations:	
	Associate Degree	+1069
	Diploma	+100
	Less 86% Baccalaureate R.N. Graduates*	-156
1984	Estimated Supply	13828
1984	Net Attrition Adjustment	-425
1984	Available Supply	13403
1984	Available Supply	13403
1984	Graduations:	
	Associate Degree	1077
	Diploma	0
	Less 86% Baccalaureate R.N. Graduates*	-197
1985	Estimated Supply	14283
1985	Net Attrition Adjustment	-439
1985	Available Supply	13844 (Headcount)

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*Percentage of R.N. Baccalaureate Degree Graduates to be subtracted from Associate Degree and Diploma Degree holders to prevent double counting. Based on national percentages as researched by WICHE.

Table 31

NURSING MANPOWER RESOURCES
Calculations for
Baccalaureate Degree Registered Nurses

	Net Attrition Rate:	-9.35%
1981	Available Supply	2584
1981	Graduations:	
	Generic	+229
	Baccalaureate R.N.	+172
	Less 81% MSN Graduates*	-47
1982	Estimated Total Supply	2938
1982	Net Attrition Adjustment	-275
1982	Available Supply	2663
1982	Available Supply	2663
1982	Graduations:	
	Generic	235
	Baccalaureate R.N.	178
	Less 81% MSN Graduates*	-61
1983	Estimated Total Supply	3015
1983	Net Attrition Adjustment	-282
1983	Available Supply	2733
1983	Available Supply	2733
1983	Graduations:	
	Generic	251
	Baccalaureate R.N.	181
	Less 81% MSN Graduates*	-71
1984	Estimated Total Supply	3094
1984	Net Attrition Adjustment	-289
1984	Available Supply	2805
1984	Available Supply	2805
1984	Graduations:	
	Generic	292
	Baccalaureate R.N.	229
	Less 81% MSN Graduates*	-63
1985	Estimated Total Supply	3263
1985	Net Attrition Adjustment	-305
1985	Available Supply	2958 (Headcount)

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*Percentage of MSN Graduates to be subtracted from the Baccalaureate RNs to prevent double counting.

Table 32

NURSING MANPOWER RESOURCES
Calculations for
Higher Degree Registered Nurses
1982-85

	Net Attrition Rate:	+5.56%
1981	Available Supply	639
1981	Graduations:	
	MSN	58
1982	Estimated Total Supply	697
1982	Net Attrition Adjustment	+39
1982	Available Supply	736
1982	Available Supply	736
1982	Graduations:	
	MSN	81
1983	Estimated Total Supply	817
1983	Net Attrition Adjustment	+45
1983	Available Supply	862
1983	Available Supply	862
1983	Graduations:	
	MSN	88
1984	Estimated Total Supply	950
1984	Net Attrition Adjustment	+53
1984	Available Supply	1003
1984	Available Supply	1003
1984	Graduations:	
	MSN	78
1985	Estimated Total Supply	1081
1985	Net Attrition Adjustment	+60
1985	Available Supply	1141 (Headcount)

FT - 89.0%
PT - 11.0%

FT - .89 (1141) = 1014.6
PT - .11 (1141) = 125.5
FTE = 1077

Chapter 6

Comparison of Nursing Manpower Requirements and Resources for 1981

I. INTRODUCTION

This chapter focuses upon comparisons of the nursing manpower requirements for nursing employment in Kentucky in 1981 as calculated using the Kentucky Nursing Manpower Requirements model, and the nursing manpower actually employed in nursing in Kentucky as reported in the July 1981 nurse licensure data. All nursing manpower calculations are for full-time equivalent (FTE) nurses and have been made for State and Area Development District levels. The comparisons of 1981 requirement projections and employed nurses are presented as numerical Reports 1-17. Each report includes lower bound and upper bound readings, designation of nursing shortage or surplus by percentage, and, differentiation of nursing manpower by educational level.

II. REPORT 1 COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND AND UPPER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY

Report 1 presents comparisons of the total number of FTE nurse requirements with nurses actually employed in nursing for 1981 at the State and District levels.

The findings indicate that:

1. At the State level there is:

- a shortage of the total number of FTE registered nurses required, primarily at the baccalaureate and higher degree levels;
- a surplus of associate degree/diploma nurses for the lower bound reading but a shortage of less than one percent for the upper bound reading; and,
- a surplus of licensed practical nurses.

2. At the Area Development District levels there is:

- a shortage in every District of the total number of FTE registered nurses required, ranging from an eleven percent deficit to a sixty-nine percent deficit;
- a shortage in every District of nurses prepared at the baccalaureate and higher degree levels, ranging from a seven percent deficit to a one hundred percent deficit for the lower bound reading, with median deficits of eighty-five percent for BSN nurses, eighty-nine percent for MSN nurses, and seventy-four percent for nurses prepared at the doctoral degree level; and
- a surplus of associate degree/diploma nurses in eleven of the fifteen Districts for the lower bound reading, but a shortage in seven of the Districts for the upper bound reading.
- All but one of the fifteen Districts have a surplus of licensed practical nurses ranging from a surplus of fifty-seven percent to two hundred forty percent for the lower bound reading, with the Districts having a surplus for the upper bound reading decreasing to twelve in number.

REPORT 1

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND AND UPPER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY

1981

		Educational Level[3]				
	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
STATE						
Lower Bound						
Requirements	19378.1	8122.6	7271.2	3784.5	199.8	4017.5
Active Licensed	13339.0	10368.5	2326.0	559.5	38.5	6230.0
-Shortage/+Surplus	-31%	+28%	-68%	-85%	-81%	+55%
Upper Bound						
Requirements	25866.6	10401.2	10142.2	4957.2	366.0	5655.1
Active Licensed	13339.0	10368.5	2326.0	559.5	38.5	6230.0
-Shortage/+Surplus	-48%	-.3%	-77%	-88%	-89%	+10%
DISTRICT I -- Purchase						
Lower Bound						
Requirements	1108.2	517.8	407.0	117.4	6.0	210.2
Active Licensed	706.0	515.0	153.0	29.0	4.0	514.0
-Shortage/+Surplus	-36%	-.5%	-62%	-75%	-33.3%	+145%
Upper Bound						
Requirements	1464.5	669.7	551.4	229.5	13.8	319.8
Active Licensed	706.0	515.0	153.0	29.0	4.0	514.0
-Shortage/+Surplus	-52%	-23%	-72%	-87%	-71%	+61%
DISTRICT II -- Pennyrile						
Lower Bound						
Requirements	797.9	311.9	326.8	154.6	4.6	152.1
Active Licensed	576.5	488.0	79.0	16.5	0	510.0
-Shortage/+Surplus	-28%	+56%	-76%	-89%	-100%	+235%
Upper Bound						
Requirements	1126.2	435.4	473.7	206.1	10.9	273.2
Active Licensed	576.5	488.0	79.0	16.5	0	510.0
-Shortage/+Surplus	-49%	+12%	-83%	-92%	-100%	+87%

DISTRICT III -- Green River

	RN Total[2]	Educational Level[3]				
		AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	1001.4	437.7	386.1	172.3	5.3	178.0
Active Licensed	633.0	534.0	85.5	13.0	0	361.5
-Shortage/+Surplus	-37%	+22%	-78%	-92%	-100%	+103%
Upper Bound						
Requirements	1331.2	564.2	529.2	225.4	12.4	271.7
Active Licensed	633.0	534.0	85.5	13.0	0	361.5
-Shortage/+Surplus	-52%	-5%	-84%	-94%	-100%	+33%

DISTRICT IV -- Barren River

	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	968.5	412.1	377.3	173.5	5.6	192.1
Active Licensed	569.5	489.5	49.0	28.0	2.0	396.0
-Shortage/+Surplus	-41%	+19%	-87%	-84%	-64%	+106%
Upper Bound						
Requirements	1313.8	546.6	526.6	227.8	12.7	305.2
Active Licensed	569.5	489.5	49.0	28.0	2.0	396.0
-Shortage/+Surplus	-57%	-10%	-91%	-88%	-84%	+30%

DISTRICT V -- Lincoln Trail

	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	659.6	227.8	290.2	136.7	4.9	110.0
Active Licensed	440.5	384.0	48.0	7.5	0	173.0
-Shortage/+Surplus	-33%	-69%	-83%	-95%	-100%	+57%
Upper Bound						
Requirements	933.6	314.3	421.3	186.1	11.9	187.8
Active Licensed	440.5	384.0	48.0	7.5	0	173.0
-Shortage/+Surplus	-52.8%	+22%	[illegible]	-96%	-100%	-8%

DISTRICT VI -- Falls

		Educational Level[3]				
	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	8239.2	4196.6	2857.0	1147.2	38.3	1606.8
Active Licensed	4422.5	3328.5	896.0	172.5	10.0	1109.5
-Shortage/Surplus	-46%	-21%	-69%	-85%	-74%	-31%
Upper Bound						
Requirements	10265.7	5049.7	3666.4	1459.2	90.4	2044.9
Active Licensed	4422.5	3328.5	896.0	172.5	10.0	1109.5
-Shortage/+Surplus	-57%	-34%	-76%	-88%	-88%	-46%

DISTRICT VII -- Northern Kentucky

	RN Total	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	1351.9	581.7	529.2	233.7	7.3	243.3
Active Licensed	910.0	796.5	82.0	25.0	1.0	526.0
-Shortage/+Surplus	-33%	+37%	-85%	-89%	-86%	+120%
Upper Bound						
Requirements	1823.9	747.7	745.9	312.9	17.3	375.7
Active Licensed	910.0	796.5	82.0	25.0	1.0	536.0
-Shortage/+Surplus	-50%	+7%	-89%	-92%	-94%	+43%

DISTRICT VIII -- Buffalo Trace

	RN Total	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	197.8	75.5	80.2	40.8	1.3	34.5
Active Licensed	145.0	127.5	11.5	6.0	0	59.5
-Shortage/+Surplus	-27%	+69%	-86%	-85%	-100%	+72%
Upper Bound						
Requirements	270.8	99.8	114.5	53.6	2.8	55.9
Active Licensed	145.0	127.5	11.5	6.0	0	59.5
-Shortage/+Surplus	-46%	+28%	-90%	-89%	-100%	+6%

DISTRICT IX -- Gateway

		Educational Level[3]				
	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	261.4	100.9	105.2	52.5	2.8	47.8
Active Licensed	162.5	140.5	10.0	12.0	1.0	80.5
-Shortage/+Surplus	-38%	+39%	-91%	-77%	-64%	+68%
Upper Bound						
Requirements	376.6	137.3	166.1	69.5	3.7	94.9
Active Licensed	162.5	140.5	10.0	12.0	1.0	80.5
-Shortage/+Surplus	-57%	+2%	-94%	-83%	-73%	-15%

DISTRICT X -- Fivco

	RN Total	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	516.0	204.6	214.2	94.5	2.7	87.2
Active Licensed	382.5	347.0	28.5	5.0	1.0	200.0
-Shortage/+Surplus	-26%	+70%	-87%	-95%	-63%	+129%
Upper Bound						
Requirements	706.6	262.0	308.9	129.0	6.6	139.8
Active Licensed	382.5	347.0	28.5	5.0	1.0	200.0
-Shortage/+Surplus	-46%	+32%	-91%	-96%	-85%	+44%

DISTRICT XI -- Big Sandy

	RN Total	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	697.9	276.5	283.9	133.4	4.1	117.4
Active Licensed	291.0	261.0	22.5	5.5	1.0	399.0
-Shortage/+Surplus	-58%	-6%	-92%	-96%	-76%	+240%
Upper Bound						
Requirements	945.6	346.8	410.4	179.2	9.2	185.3
Active Licensed	291.0	261.0	22.5	5.5	1.0	399.0
-Shortage/+Surplus	-69%	-25%	-95%	-97%	-89%	+115%

DISTRICT XII - Kentucky River

		Educational Level[3]				
	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	415.7	147.6	178.7	86.9	2.5	64.6
Active Licensed	249.0	178.5	50.0	17.5	2.0	234.0
-Shortage/+Surplus	-40%	-21%	-72%	-80%	-20%	+262%
Upper Bound						
Requirements	595.0	194.6	274.5	120.0	5.9	123.1
Active Licensed	249.0	178.5	50.0	17.5	2.0	234.0
-Shortage/+Surplus	-58%	-8%	-82%	-85%	-66%	+90%

DISTRICT XIII -- Cumberland Valley

	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	847.3	339.3	346.1	157.2	4.7	167.7
Active Licensed	526.0	453.0	54.5	17.5	0	400.5
-Shortage/+Surplus	-38%	+34%	-84%	-89%	-100%	+139%
Upper Bound						
Requirements	1174.5	441.7	507.6	214.0	11.2	278.8
Active Licensed	526.0	453.0	54.5	17.5	0	400.5
-Shortage/+Surplus	-55%	+3%	-89%	-92%	-100%	+44%

DISTRICT XIV -- Lake Cumberland

	RN Total[2]	AD/DIP	BSN	MSN	DOC	LPN
Lower Bound						
Requirements	609.1	233.1	257.0	115.7	3.0	124.0
Active Licensed	337.0	295.5	31.5	9.0	1.0	205.5
-Shortage/+Surplus	-45%	+27%	-88%	-92%	-67%	+66%
Upper Bound						
Requirements	840.8	315.4	362.8	154.0	7.8	203.5
Active Licensed	337.0	295.5	31.5	9.0	1.0	205.5
-Shortage/+Surplus	-60%	-6%	-91%	-94%	-87%	+1%

	RN Total[2]	Educational Level[3] AD/DIP	BSN	MSN	DOC	LPN
DISTRICT XV -- Bluegrass						
Lower Bound						
Requirements	3291.5	1499.1	1227.2	548.4	16.8	642.4
Active Licensed	2937.5	1992.0	725.5	191.5	15.5	1029.0
-Shortage/+Surplus	-11%	+32%	-41%	-65%	-7%	+60%
Upper Bound						
Requirements	4305.0	1865.9	1683.8	715.8	39.6	939.8
Active Licensed	2937.5	1992.0	725.5	191.5	15.5	1029.0
-Shortage/+Surplus	-32%	+7%	-57%	-73%	-61%	+9%

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[1] Annual nurse licensure analysis compiled by the Council on Higher Education. Data source: Kentucky Board of Nursing licensure master file.

[2] "RN Total" for "Active Licensed" includes RNs at the four educational levels plus RNs who gave "no response" for their educational level on the Kentucky Board of Nursing Licensure Renewal Application.

[3] For comparison purposes:

Requirements Model		Licensure
AD/DIP	=	AD, Diploma, BS Other
BSN	=	BSN
MSN	=	MSN, MS Other
DOC	=	Doctorate
LPN	=	All LPNs

III. REPORTS 2-17

Reports 2 through 17 present comparisons of the total number of FTE nurse requirements with nurses actually employed in nursing in 1981 by practice setting and position at the State and District levels. The reader is again reminded that designation of nursing manpower requirements by educational level is based on the knowledge/skill content represented by the various educational levels of the nursing education system as well as the presumed complexity of nursing care indicated in given practice settings and knowledge/skill needed in given positions. The reader is also reminded that the nurse licensure data used in this study are reported by individual licensed nurses.

The findings indicate the following:

1. At the State level in Hospitals:

   - there is a shortage of registered nurses in positions of general duty staff, executive nurse administrator and staff development;
   - a surplus of registered nurses in mid-level supervisor positions;
   - a surplus of licensed practical nurses in general duty staff positions; and,
   - licensed practical nurses in positions designated as registered nurse positions.
   - Registered nurse shortages in all positions are highest for nurses prepared at the baccalaureate and higher degree levels, and
   - associate degree/diploma nurses are in positions designated as requiring baccalaureate or higher degree nursing preparation--mid-level supervisor, executive nurse administrator, staff development.

2. At the State level in Community Health:

   - there is a shortage of registered nurses prepared at the baccalaureate and higher degree levels in staff and executive nurse administrator positions;
   - a surplus of four hundred fifteen percent of associate degree/diploma nurses in staff positions; and,
   - a surplus of licensed practical nurses in staff positions.
   - Nurses prepared at the associate degree/diploma and baccalaureate degree levels are in executive nurse administrator positions designated as requiring master's and doctoral degree level preparation.

3. At the State level in Long-Term Care Facilities:

- there is a shortage of ADN/DIP and BSN registered nurses and licensed practical nurses in staff positions; and,
- a shortage of BSN and MSN registered nurses in executive nurse administrator positions.
- Associate degree/diploma registered nurses are in executive nurse administrator positions designated as requiring baccalaureate and master's degree level preparation; and
- licensed practical nurses are in executive nurse administrator positions designated as registered nurse positions.

4. At the State level in Physician's Offices:

- there is a shortage of registered nurses; and,
- a surplus of licensed practical nurses.

5. At the State level in School Nursing and Occupational/Industrial:

- there is a shortage of registered nurses prepared at the baccalaureate and master's degree levels; and
- associate degree/diploma registered nurses and licensed practical nurses are in positions designated as requiring baccalaureate and master's degree level nursing preparation.

6. At the State level in Private Duty Nursing:

- there is a shortage of ADN/DIP and BSN registered nurses; and,
- licensed practical nurses are in a position designated as a registered nurse position.

7. At the State level in School of Nursing:

- there is a shortage of registered nurses prepared at the master's and doctoral degree levels in faculty administrator positions; and,

- a surplus of BSN registered nurses in faculty positions.
- Associate degree/diploma and baccalaureate degree nurses are in positions designated as requiring advanced nursing degree preparation; and,
- licensed practical nurses are in faculty positions designated as registered nurse positions.

8. At the District level in Hospitals:

- there is an overall shortage of registered nurses in general duty staff positions in fourteen Districts but with five Districts having a small surplus of ADN/DIP nurses in staff positions;
- thirteen of the fifteen Districts have a surplus (ranging from twenty-eight percent to three hundred fifty-eight percent) of registered nurses in mid-level supervisor positions, but all Districts have a shortage of BSN- and MSN-prepared nurses in these positions;
- in all Districts associate degree/diploma registered nurses are in mid-level supervisor positions which are designated as requiring baccalaureate and master's degree preparation;
- there is an overall shortage of registered nurses in executive nurse administrator positions in all Districts, with one District having a surplus of BSN registered nurses in these positions;
- in fourteen Districts associate degree/diploma registered nurses are in executive nurse administrator positions which are designated as requiring baccalaureate and higher degree preparation;
- fourteen Districts have a shortage of registered nurses in staff development positions;
- in thirteen Districts ADN/DIP nurses are in staff development positions which are designated as requiring baccalaureate and master's degree nursing preparation;

- fourteen Districts have a surplus of licensed practical nurses in general duty staff positions; and
- in fourteen Districts licensed practical nurses are in positions designated as registered nurse positions: mid-level supervisor and/or executive nurse administrator.

9. At the District level in Community Health:
   - there is an overall shortage of registered nurses in staff positions in all Districts; and,
   - a shortage of BSN- and MSN-prepared nurses in staff positions in all Districts.
   - Associate degree/diploma nurses are in staff positions which are designated as requiring baccalaureate and master's degree nursing preparation;
   - fourteen Districts have a shortage of registered nurses in executive nurse positions; and,
   - all Districts have a shortage of nurses prepared at the master's and/or doctoral degree levels in executive nurse administrator positions.
   - In ten Districts, ADN/DIP and BSN nurses are in executive nurse positions which are designated as requiring master's and higher degree level nursing preparation.

10. At the District level in Long-Term Care Facilities:
    - in fourteen Districts there is a shortage of ADN/DIP and/or BSN registered nurses in staff positions; and,
    - in all Districts there is a shortage of licensed practical nurses in staff positions.
    - In twelve Districts ADN/DIP nurses are in executive nurse administrator positions which are designated as requiring baccalaureate and master's degree nursing preparation; and

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- in ten Districts licensed practical nurses are in executive nurse administrator positions which are designated as registered nurse positions.

11. At the District level in Physician's Offices:

    - there is a shortage of registered nurses in all positions in eleven Districts; and,
    - a surplus of licensed practical nurses in thirteen Districts.

12. At the District level in School Nursing:

    - there is an overall shortage of registered nurses in all Districts; and,
    - a shortage of BSN- and MSN-prepared nurses in all Districts.
    - In twelve Districts Associate degree/diploma nurses are in a position designated as requiring baccalaureate or master's degree preparation; and,
    - in nine Districts licensed practical nurses are in a position designated as a registered nurse position.

13. At the District level in Occupational/Industrial Nursing:

    - there is an overall shortage of registered nurses in all Districts;
    - a shortage of BSN- and/or MSN-prepared nurses in all Districts; and,
    - in thirteen Districts, ADN/DIP nurses are in positions designated as requiring baccalaureate and Master's degree level preparation.
    - In twelve Districts licensed practical nurses are in positions designated as registered nurse positions.

14. At the District level in Private Duty Nursing:

    - there is a shortage of nurses in all Districts; and,
    - in thirteen Districts licensed practical nurses are in a position designated as a registered nurse position.

REPORT 2

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY by Employment Setting, Position, and Educational Level

1981 -- STATE TOTALS

	Total		RN Educational Level			
	RNs	AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	9374.9	6480.7	2341.5	552.7	0	2466.3
Active Licensed	7047.0	5678.0	1288.5	50.0	10.5	3715.5
-Shortage/+Surplus	-25%	-12%	-45%	-91%	*	+51%
Mid-level Supervisor						
Requirements	1385.1	0	1038.8	346.3	0	0
Active Licensed	2102.5	1726.5	339.0	28.5	1.0	194.0
-Shortage/+Surplus	+52%	*	-67%	-92%	*	*
Executive Nurse Administrator						
Requirements	498.8	0	137.0	346.0	15.8	0
Active Licensed	202.5	113.0	47.0	42.5	0	9.0
-Shortage/+Surplus	-59%	*	-66%	-88%	-100%	*
Staff Development						
Requirements	193.0	0	115.3	77.7	0	0
Active Licensed	124.0	66.5	48.0	9.5	0	4.0
-Shortage/+Surplus	-36%	*	-58%	-88%	0	*
COMMUNITY HEALTH						
Staff						
Requirements	2717.0	98.5	1497.2	1121.3	0	102.6
Active Licensed	732.5	543.0	163.0	22.5	0	142.5
-Shortage/+Surplus	-73%	+451%	-89%	-98%	0	+39%

State Totals (continued)	Total RNs	RN Educational Level				LPN
		AD/DIP	BSN	MSN	DOC	
Executive Nurse Administrator						
Requirements	168.0	0	0	159.6	8.4	0
Active Licensed	50.5	23.0	16.5	11.0	0	1.5
-Shortage/+Surplus	-70%	*	*	-93%	-100%	*
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	909.2	754.3	154.9	0	0	1152.8
Active Licensed	527.0	470.5	50.5	4.5	0	1089.5
-Shortage/+Surplus	-42%	-38%	-67%	*	0	-5%
Executive Nurse Administrator						
Requirements	382.0	0	286.5	95.5	0	0
Active Licensed	86.5	71.0	10.5	4.0	0	23.5
-Shortage/+Surplus	-77%	*	-96%	-96%	0	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	986.3	493.1	246.6	246.6	0	295.9
Active Licensed	573.0	484.0	75.0	10.0	1.5	533.5
-Shortage/+Surplus	-42%	-2%	-69%	-96%	*	+80%
SCHOOL NURSE						
Requirements	1020.2	0	874.3	145.9	0	0
Active Licensed	122.0	96.0	22.5	2.5	0	26.0
-Shortage/+Surplus	-88%	*	-97%	-98%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	547.2	0	468.9	78.3	0	0
Active Licensed	241.5	218.0	18.0	2.0	0	76.5
-Shortage/+Surplus	-56%	*	-96%	-97%	0	*
PRIVATE DUTY						
Requirements	370.1	296.1	74.0	0	0	0
Active Licensed	71.5	65.5	4.5	2.5	0	137.0
-Shortage/+Surplus	-81%	-78%	-94%	*	0	*

State Totals (continued)	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
SCHOOL OF NURSING						
Faculty						
Requirements	475.2	0	36.0	377.0	62.2	0
Active Licensed	428.0	85.0	84.5	248.0	8.5	5.0
-Shortage/+Surplus	-10%	*	+135%	-34%	-86%	*
Administrator						
Requirements	47.5	0	0	26.7	20.8	0
Active Licensed	47.5	3.0	7.0	25.0	13.0	0
-Shortage/+Surplus	0	*	*	-6%	-38%	0

*Requirements at this educational level for this position are zero.

REPORT 3

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY by Employment Setting, Position, and Educational Level

1981 -- DISTRICT I
Purchase

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	598.1	421.7	143.9	32.5	0	119.2
Active Licensed	380.0	297.5	78.0	1.0	1.0	361.0
-Shortage/+Surplus	-36%	-29%	-46%	-97%	*	+202%
Mid-level Supervisor						
Requirements	85.3	0	64.0	21.3	0	0
Active Licensed	109.0	80.5	24.5	1.0	1.0	7.5
-Shortage/+Surplus	+28%	*	-62%	-95%	*	*
Executive Nurse Administrator						
Requirements	32.0	0	9.0	22.0	1.0	0
Active Licensed	9.0	6.0	1.0	2.0	0	.5
-Shortage/+Surplus	-72%	*	-88%	-91%	-100%	*
Staff Development						
Requirements	16.0	0	9.7	6.3	0	0
Active Licensed	9.0	5.0	3.0	1.0	0	0
-Shortage/+Surplus	-44%	*	-69%	-84%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	132.4	5.0	73.9	53.5	0	5.3
Active Licensed	43.0	28.0	13.5	2.5	0	8.0
-Shortage/+Surplus	-68%	+460%	-82%	-95%	0	+51%

		RN				
	Total	Educational Level				
District I (continued)	RNs	AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	10.0	0	0	9.5	.5	0
Active Licensed	1.0	1.0	0	0	0	0
-Shortage/+Surplus	-90%	*	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	65.9	55.2	10.7	0	0	72.8
Active Licensed	24.0	21.0	3.0	0	0	70.5
-Shortage/+Surplus	-64%	-62%	-72%	0	0	-3%
Executive Nurse Administrator						
Requirements	32.0	0	9.0	22.0	1.0	0
Active Licensed	9.0	6.0	2.0	1.0	0	2.0
-Shortage/+Surplus	-72%	*	-78%	-95%	-100%	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	42.4	21.2	10.6	10.6	0	12.7
Active Licensed	27.5	17.5	9.0	1.0	0	10.5
-Shortage/+Surplus	-35%	-17%	-15%	-90%	0	-17%
SCHOOL NURSE						
Requirements	43.7	0	37.4	6.3	0	0
Active Licensed	7.5	6.0	1.5	0	0	0
-Shortage/+Surplus	-83%	*	-96%	-100%	0	0
OCCUPATIONAL/INDUSTRIAL						
Requirements	27.1	0	23.2	3.9	0	0
Active Licensed	21.0	18.5	2.5	0	0	5.5
-Shortage/+Surplus	-23%	*	-89%	-100%	0	*
PRIVATE DUTY						
Requirements	18.2	14.6	3.6	0	0	0
Active Licensed	1.5	1.5	0	0	0	.5
-Shortage/+Surplus	-92%	-90%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 4

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY
by Employment Setting, Position, and Educational Level

1981 -- DISTRICT II
Pennyrile

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	297.1	209.0	72.5	15.6	0	54.4
Active Licensed	235.5	209.5	24.0	2.0	0	300.5
-Shortage/+Surplus	-21%	+.2%	-67%	-87%	0	+452%
Mid-level Supervisor						
Requirements	38.4	0	28.8	9.6	0	0
Active Licensed	176.0	150.5	25.5	0	0	39.5
-Shortage/+Surplus	+358%	*	-11%	-100%	0	*
Executive Nurse Administrator						
Requirements	27.0	0	9.0	17.2	.8	0
Active Licensed	12.0	6.0	2.0	4.0	0	0
-Shortage/+Surplus	-56%	*	-78%	-77%	-100%	0
Staff Development						
Requirements	12.0	0	7.3	4.7	0	0
Active Licensed	6.5	5.0	.5	1.0	0	0
-Shortage/+Surplus	-46%	*	-93%	-78%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	150.6	5.6	84.0	61.0	0	5.9
Active Licensed	31.0	25.5	2.0	1.5	0	2.5
-Shortage/+Surplus	-79%	+355%	-98%	-98%	0	-58%

District II (continued)	Total RNs	RN Educational Level				LPN
		AD/DIP	BSN	MSN	DOC	
Executive Nurse Administrator						
Requirements	13.0	0	0	12.4	.6	0
Active Licensed	2.0	1.0	1.0	0	0	1.0
-Shortage/+Surplus	-85%	*	*	-100%	-100%	*
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	71.5	59.8	11.7	0	0	79.3
Active Licensed	30.5	27.0	3.5	0	0	90.5
-Shortage/+Surplus	-57%	-55%	-70%	0	0	+14%
Executive Nurse Administrator						
Requirements	32.0	0	24.0	8.0	0	0
Active Licensed	4.0	3.0	1.0	0	0	4.0
-Shortage/+Surplus	-88%	*	-96%	-100%	0	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	41.9	20.9	10.5	10.5	0	12.5
Active Licensed	21.5	19.5	.5	1.5	0	37.0
-Shortage/+Surplus	-49%	-7%	-95%	-86%	0	+196%
SCHOOL NURSE						
Requirements	57.9	0	49.6	8.3	0	0
Active Licensed	0	0	0	0	0	1.0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	29.5	0	25.3	4.2	0	0
Active Licensed	7.0	5.5	1.5	0	0	6.0
-Shortage/+Surplus	-76%	*	-94%	-100%	0	*
PRIVATE DUTY						
Requirements	20.8	16.6	4.2	0	0	0
Active Licensed	0	0	0	0	0	8.0
-Shortage/+Surplus	-100%	-100%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 5

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY by Employment Setting, Position, and Educational Level

1981 -- DISTRICT III
Green River

		RN Educational Level				
	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	500.7	350.9	119.1	30.7	0	98.4
Active Licensed	301.5	262.5	37.0	1.5	0	194.5
-Shortage/+Surplus	-40%	-25%	-69%	-95%	0	+98%
Mid-level Supervisor						
Requirements	79.5	0	59.6	19.9	0	0
Active Licensed	149.5	129.5	19.0	1.0	0	5.0
-Shortage/+Surplus	+88%	*	-68%	-95%	0	*
Executive Nurse Administrator						
Requirements	24.1	0	6.8	16.5	.8	0
Active Licensed	11.5	6.5	3.0	2.0	0	1.5
-Shortage/+Surplus	-52%	*	-56%	-88%	-100%	*
Staff Development						
Requirements	13.0	0	6.3	6.7	0	0
Active Licensed	5.5	3.5	2.0	0	0	0
-Shortage/+Surplus	-58%	-100%	-68%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	141.0	4.7	77.9	58.4	0	4.7
Active Licensed	30.0	25.0	5.0	0	0	2.0
-Shortage/+Surplus	-78%	+431%	-94%	-100%	0	-57%

District III (continued)

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	58.1	0	26.3	30.6	1.2	0
Active Licensed	2.0	1.0	0	1.0	0	0
-Shortage/+Surplus	-97%	*	-100%	-97%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	55.2	46.1	9.1	0	0	63.0
Active Licensed	23.0	22.0	1.0	0	0	88.5
-Shortage/+Surplus	-58%	-52%	-89%	0	0	+40%
Executive Nurse Administrator						
Requirements	26.0	0	19.5	6.5	0	0
Active Licensed	5.0	4.5	.5	0	0	3.0
-Shortage/+Surplus	-81%	*	-97%	-100%	0	+100%
PHYSICIANS' OFFICES						
All Positions						
Requirements	40.0	20.0	10.0	10.0	0	12.0
Active Licensed	32.0	28.5	3.5	0	0	45.5
-Shortage/+Surplus	-20%	+43%	-65%	-100%	0	+279%
SCHOOL NURSE						
Requirements	56.5	0	48.4	8.1	0	0
Active Licensed	4.5	4.5	0	0	0	0
-Shortage/+Surplus	-92%	*	-100%	-100%	0	0
OCCUPATIONAL/INDUSTRIAL						
Requirements	29.2	0	25.0	0	0	0
Active Licensed	19.0	17.0	2.0	0	0	8.5
-Shortage/+Surplus	-35%	*	-92%	0	0	*
PRIVATE DUTY						
Requirements	20.1	16.1	4.0	0	0	0
Active Licensed	3.0	2.0	.5	.5	0	3.0
-Shortage/+Surplus	-85%	-88%	-88%	*	0	*

*Requirements at this educational level for this position are zero.

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REPORT 6

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY
by Employment Setting, Position, and Educational Level

1981 -- DISTRICT IV
Barren River

HOSPITAL

General Duty-Staff

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
Requirements	441.6	312.5	105.2	23.9	0	92.5
Active Licensed	260.0	238.5	19.5	1.0	1.0	235.0
-Shortage/+Surplus	-41%	-24%	-81%	-96%	*	+154%

Mid-level Supervisor

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	61.5	0	46.1	15.4	0	0
Active Licensed	111.0	98.0	10.0	2.0	0	19.0
-Shortage/+Surplus	+80%	*	-78%	-87%	0	+100%

Executive Nurse Administrator

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	32.0	0	9.0	22.0	1.0	0
Active Licensed	8.0	6.0	2.0	0	0	0
-Shortage/+Surplus	-75%	*	-78%	-100%	-100%	0

Staff Development

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	13.0	0	4.5	8.5	0	0
Active Licensed	2.5	2.5	0	0	0	0
-Shortage/+Surplus	-81%	*	-100%	-100%	0	0

COMMUNITY HEALTH

Staff

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	158.6	37.0	88.5	64.2	0	6.2
Active Licensed	46.0	5.9	7.0	2.0	0	10.5
-Shortage/+Surplus	-71%	-84%	-92%	-97%	0	+69%

District IV (continued)	Total RNs	RN Educational Level				
		AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	12.0	0	0	11.4	.6	0
Active Licensed	3.0	2.0	0	1.0	0	0
-Shortage/+Surplus	-75%	*	0	-91%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	69.2	57.7	11.5	0	0	82.2
Active Licensed	33.5	30.0	3.5	0	0	63.0
-Shortage/+Surplus	-52%	-48%	-70%	0	0	-23%
Executive Nurse Administrator						
Requirements	24.0	0	18.0	6.0	0	0
Active Licensed	5.0	4.0	0	5.0	0	3.0
-Shortage/+Surplus	-79%	*	-100%	-17%	0	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	37.2	18.6	9.3	9.3	0	11.2
Active Licensed	19.0	17.5	1.5	0	0	45.0
-Shortage/+Surplus	-49%	-6%	-84%	-100%	0	+300%
SCHOOL NURSE						
Requirements	57.3	0	49.1	8.2	0	0
Active Licensed	7.5	6.5	1.0	0	0	.5
-Shortage/+Surplus	-87%	*	-98%	-100%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	32.3	0	27.7	4.6	0	0
Active Licensed	7.0	6.0	1.0	0	0	9.5
-Shortage/+Surplus	-78%	*	-96%	-100%	0	+100%
PRIVATE DUTY						
Requirements	21.9	17.5	4.4	0	0	0
Active Licensed	.5	.5	0	0	0	1.5
-Shortage/+Surplus	-98%	-97%	-100%	0	0	+100%

*Requirements at this educational level for this position are zero.

REPORT 7

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY

by Employment Setting, Position, and Educational Level

1981 -- DISTRICT V
Lincoln Trail

	Total	RN Educational Level				
	RNs	AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	208.1	151.2	46.3	10.6	0	47.4
Active Licensed	244.5	220.0	23.5	1.0	0	73.5
-Shortage/+Surplus	+18%	+46%	-49%	-91%	0	+55%
Mid-level Supervisor						
Requirements	24.6	0	18.7	5.9	0	0
Active Licensed	38.5	35.0	3.5	0	0	20.0
-Shortage/+Surplus	-57%	*	-81%	-100%	0	*
Executive Nurse Administrator						
Requirements	17.0	0	9.0	7.8	.2	0
Active Licensed	8.0	7.0	0	1.0	0	1.0
-Shortage/+Surplus	-53%	*	-100%	-87%	-100%	*
Staff Development						
Requirements	6.0	0	4.3	1.7	0	0
Active Licensed	2.5	1.0	1.5	0	0	0
-Shortage/+Surplus	-58%	*	-65%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	159.0	5.7	88.7	64.6	0	5.8
Active Licensed	36.0	30.5	5.5	0	0	0
-Shortage/+Surplus	-77%	+435%	-94%	-100%	0	-100%

*Requirements at this educational level for this position are zero.

District V (continued)	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	16.0	0	0	15.2	.8	0
Active Licensed	4.5	2.5	2.0	0	0	0
-Shortage/+Surplus	-72%	*	*	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	48.8	41.1	7.7	0	0	49.3
Active Licensed	19.5	16.0	3.0	.5	0	55.5
-Shortage/+Surplus	-60%	-61%	-61%	*	0	+13%
Executive Nurse Administrator						
Requirements	26.0	0	19.5	6.5	0	0
Active Licensed	7.0	7.0	0	0	0	2.0
-Shortage/+Surplus	-73%	*	-100%	-100%	0	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	24.4	12.2	6.1	6.1	0	7.3
Active Licensed	34.0	30.5	3.5	0	0	12.5
-Shortage/+Surplus	+39%	+150%	-43%	-100%	0	+71%
SCHOOL NURSE						
Requirements	67.8	0	58.1	9.7	0	0
Active Licensed	8.0	8.0	0	0	0	0
-Shortage/+Surplus	-88%	*	-100%	-100%	0	0
OCCUPATIONAL/INDUSTRIAL						
Requirements	32.0	0	27.4	4.6	0	0
Active Licensed	5.0	5.0	0	0	0	0
-Shortage/+Surplus	-84%	*	-100%	-100%	0	0
PRIVATE DUTY						
Requirements	22.0	17.6	4.4	0	0	0
Active Licensed	.5	0	.5	0	0	1.0
-Shortage/+Surplus	-98%	-100%	-89%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 8

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY by Employment Setting, Position, and Educational Level

1981 -- DISTRICT VI
Falls

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	5408.8	3679.4	1270.4	369.0	0	1182.4
Active Licensed	2624.0	2053.5	533.5	30.0	2.0	636.0
-Shortage/+Surplus	-51%	-44%	-58%	-92%	*	-46%
Mid-level Supervisor						
Requirements	987.5	0	740.6	246.9	0	0
Active Licensed	546.5	427.0	99.0	18.0	0	27.5
-Shortage/+Surplus	-45%	*	-87%	-93%	0	*
Executive Nurse Administrator						
Requirements	63.1	0	2.3	57.8	3.0	0
Active Licensed	51.5	21.0	17.0	13.5	0	2.0
-Shortage/+Surplus	-18%	*	+639%	-77%	-100%	*
Staff Development						
Requirements	49.9	0	21.3	28.6	0	0
Active Licensed	53.0	23.0	22.5	7.5	0	0
-Shortage/+Surplus	+6%	*	+6%	-74%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	608.3	21.4	328.4	258.5	0	22.3
Active Licensed	157.0	100.0	52.5	2.5	0	30.0
-Shortage/+Surplus	-74%	+367%	-84%	-99%	0	+35%

District VI (continued)	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	17.0	0	0	16.1	9.0	0
Active Licensed	18.5	7.0	5.5	6.0	0	0
-Shortage/+Surplus	+9%	*	*	-37%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	205.4	168.6	36.8	0	0	298.8
Active Licensed	188.0	161.5	22.0	3.5	0	208.0
-Shortage/+Surplus	-8%	-4%	-40%	*	0	-30%
Executive Nurse Administrator						
Requirements	84.0	0	63.0	21.0	0	0
Active Licensed	29.0	21.0	6.0	1.0	0	3.0
-Shortage/+Surplus	-65%	*	-90%	-95%	0	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	344.4	172.2	86.1	86.1	0	103.3
Active Licensed	144.5	117.0	23.0	2.5	.5	49.5
-Shortage/+Surplus	-58%	-32%	-73%	-97%	*	-52%
SCHOOL NURSE						
Requirements	217.5	0	186.4	31.1	0	0
Active Licensed	17.5	12.5	4.0	1.0	0	7.0
-Shortage/+Surplus	-92%	*	-98%	-97%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	123.2	0	105.6	17.6	0	0
Active Licensed	102.0	89.0	7.5	2.0	0	12.0
-Shortage/+Surplus	-17%	*	-93%	-89%	0	*
PRIVATE DUTY						
Requirements	81.2	65.0	16.2	0	0	0
Active Licensed	39.0	35.0	2.0	2.0	0	65.0
-Shortage/+Surplus	-52%	-46%	-88%	*	0	*

*Requirements at this educational level for this position are zero.

REPORT 9

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY
by Employment Setting, Position, and Educational Level

1981 -- DISTRICT VII
Northern Kentucky

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	640.9	455.0	151.8	34.1	0	129.7
Active Licensed	542.0	499.0	35.5	1.0	1.0	349.0
-Shortage/+Surplus	-15%	+10%	-77%	-97%	*	+169.1%
Mid-level Supervisor						
Requirements	87.9	0	65.9	22.0	0	0
Active Licensed	119.5	107.5	11.5	.5	0	4.0
-Shortage/+Surplus	+36%	*	-83%	-98%	0	*
Executive Nurse Administrator						
Requirements	29.1	0	6.8	21.3	1.0	0
Active Licensed	9.0	4.0	2.0	3.0	0	1.0
-Shortage/+Surplus	-69%	*	-71%	-86%	-100%	*
Staff Development						
Requirements	12.9	0	7.9	5.0	0	0
Active Licensed	11.5	7.5	4.0	0	0	0
-Shortage/+Surplus	-11%	*	-49%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	229.7	8.5	128.2	93.0	0	8.8
Active Licensed	41.0	36.0	5.0	0	0	9.0
-Shortage/+Surplus	-82%	+323%	-96%	-100%	0	+2%

*Requirements at this educational level for this position are zero.

District VII (continued)	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	11.0	0	0	10.5	.5	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	70.5	58.7	11.8	0	0	84.4
Active Licensed	55.5	51.5	3.0	1.0	0	113.0
-Shortage/+Surplus	-22%	-12%	-75%	*	0	+34%
Executive Nurse Administrator						
Requirements	29.1	0	6.8	21.3	1.0	0
Active Licensed	6.0	6.0	0	0	0	1.0
-Shortage/+Surplus	-79%	*	-100%	-100%	-100%	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	68.1	34.1	17.0	17.0	0	20.5
Active Licensed	34.5	31.5	3.0	0	0	36.0
-Shortage/+Surplus	-49%	+8%	-82%	-100%	0	+76%
SCHOOL NURSE						
Requirements	90.7	0	77.7	13.0	0	0
Active Licensed	11.5	8.5	3.0	0	0	2.0
-Shortage/+Surplus	-87%	*	-96%	-100%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	45.9	0	39.3	6.6	0	0
Active Licensed	7.0	7.0	0	0	0	4.5
-Shortage/+Surplus	-85%	*	-100%	-100%	0	*
PRIVATE DUTY						
Requirements	31.7	25.4	6.3	0	0	0
Active Licensed	3.5	3.5	0	0	0	4.5
-Shortage/+Surplus	-89%	-86%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 10

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY

by Employment Setting, Position, and Educational Level

1981 -- DISTRICT VIII
Buffalo Trace

	Total RNs	RN Educational Level AD/DIP	RN Educational Level BSN	RN Educational Level MSN	RN Educational Level DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	78.5	55.8	18.5	4.2	0	17.0
Active Licensed	56.0	53.0	3.0	0	0	35.0
-Shortage/+Surplus	-29%	-5%	-84%	-100%	0	+106%
Mid-level Supervisor						
Requirements	10.4	0	7.8	2.6	0	0
Active Licensed	28.5	27.5	1.0	0	0	0
-Shortage/+Surplus	+170%	*	-87%	-100%	0	0
Executive Nurse Administrator						
Requirements	9.9	0	2.3	5.3	0	0
Active Licensed	5.0	2.0	2.0	1.0	0	3.0
-Shortage/+Surplus	-49%	*	-13%	-81%	0	*
Staff Development						
Requirements	3.0	0	.9	2.1	0	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	40.1	1.5	22.4	16.2	0	1.6
Active Licensed	12.5	11.5	1.0	0	0	0
-Shortage/+Surplus	-69%	+667%	-96%	-100%	0	-100%

District VIII (continued)	Total RNs	RN Educational Level AD/DIP	 BSN	 MSN	 DOC	LPN
Executive Nurse Administrator						
Requirements	5.0	0	0	4.8	.2	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	12.3	10.3	2.0	0	0	13.9
Active Licensed	13.5	13.0	.5	0	0	10.0
-Shortage/+Surplus	+10%	+26%	-25%	0	0	-28%
Executive Nurse Administrator						
Requirements	4.0	0	3.0	1.0	0	0
Active Licensed	2.0	1.0	1.0	0	0	0
-Shortage/+Surplus	-50%	*	-67%	-100%	0	0
PHYSICIANS' OFFICES						
All Positions						
Requirements	6.7	3.3	1.7	1.7	0	2.0
Active Licensed	11.5	10.5	0	1.0	0	7.0
-Shortage/+Surplus	+72%	+218%	-100%	-41%	0	+250%
SCHOOL NURSE						
Requirements	14.8	0	12.7	2.1	0	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	0
OCCUPATIONAL/INDUSTRIAL						
Requirements	7.9	0	6.8	1.1	0	0
Active Licensed	3.0	3.0	0	0	0	2.0
-Shortage/+Surplus	-62%	*	-100%	-100%	0	*
PRIVATE DUTY						
Requirements	5.5	4.5	1.1	0	0	0
Active Licensed	0	0	0	0	0	.5
-Shortage/+Surplus	-100%	-100%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 11

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY by Employment Setting, Position, and Educational Level

1981 -- DISTRICT IX
Gateway

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	104.3	73.8	25.0	5.5	0	23.7
Active Licensed	75.5	74.5	1.0	0	0	44.0
-Shortage/+Surplus	-28%	+1%	-96%	-100%	0	+86%
Mid-level Supervisor						
Requirements	12.7	0	9.5	3.2	0	0
Active Licensed	23.5	19.5	2.0	2.0	0	0
-Shortage/+Surplus	+85%	*	-79%	-38%	0	0
Executive Nurse Administrator						
Requirements	11.1	0	4.5	6.3	.3	0
Active Licensed	2.0	0	2.0	0	0	0
-Shortage/+Surplus	-82%	0	-56%	-100%	-100%	0
Staff Development						
Requirements	4.0	0	2.8	1.2	0	0
Active Licensed	2.0	1.0	1.0	0	0	0
-Shortage/+Surplus	-50%	*	-64%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	46.8	0	27.1	19.7	0	1.8
Active Licensed	13.5	12.5	0	1.0	0	1.0
-Shortage/+Surplus	-71%	*	-100%	-95%	0	-44%

	Total	RN Educational Level				
District IX (continued)	RNs	AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	5.0	0	0	4.8	.2	0
Active Licensed	1.0	0	0	0	0	0
-Shortage/+Surplus	-80%	*	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	17.6	14.7	2.9	0	0	9.6
Active Licensed	4.0	4.0	0	0	0	18.5
-Shortage/+Surplus	-77%	-93%	-100%	0	0	+93%
Executive Nurse Administrator						
Requirements	10.0	0	7.5	2.5	0	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	0
PHYSICIANS' OFFICES						
All Positions						
Requirements	10.4	5.2	2.6	2.6	0	3.1
Active Licensed	8.5	7.5	1.0	0	0	11.0
-Shortage/+Surplus	-18%	+44%	-62%	-100%	0	+254%
SCHOOL NURSE						
Requirements	19.3	0	16.5	2.8	0	0
Active Licensed	3.0	3.0	0	0	0	2.5
-Shortage/+Surplus	-84%	*	-100%	-100%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	9.9	0	8.5	1.4	0	0
Active Licensed	0	0	0	0	0	1.0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	*
PRIVATE DUTY						
Requirements	6.7	5.4	13.0	0	0	0
Active Licensed	0	0	0	0	0	.5
-Shortage/+Surplus	-100%	-100%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 12

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY by Employment Setting, Position, and Educational Level

1981 -- DISTRICT X
Fivco

	Total	RN				
		Educational Level				
	RNs	AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	229.6	159.7	57.0	12.9	0	53.6
Active Licensed	196.5	180.5	15.0	0	1.0	128.5
-Shortage/+Surplus	-14%	+13%	-74%	-100%	*	+140%
Mid-level Supervisor						
Requirements	32.2	0	24.2	8.0	0	0
Active Licensed	53.5	52.5	1.0	0	0	3.5
-Shortage/+Surplus	+66%	*	-96%	-100%	0	+100%
Executive Nurse Administrator						
Requirements	8.0	0	2.2	5.5	.3	0
Active Licensed	6.0	5.0	1.0	0	0	0
-Shortage/+Surplus	-25%	*	-55%	-100%	-100%	0
Staff Development						
Requirements	7.0	0	4.1	2.9	0	0
Active Licensed	4.0	3.0	1.0	0	0	0
-Shortage/+Surplus	-43%	*	-76%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	93.5	3.8	47.9	41.8	0	3.9
Active Licensed	32.5	31.0	.5	1.0	0	1.0
-Shortage/+Surplus	-65%	+715%	-97%	-98%	0	-74%

		RN Educational Level				
District X (continued)	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	5.1	0	0	4.8	.3	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	21.6	18.1	3.5	0	0	22.6
Active Licensed	3.5	3.5	0	0	0	39.5
-Shortage/+Surplus	-84%	-81%	-100%	0	0	+75%
Executive Nurse Administrator						
Requirements	8.0	0	6.0	2.0	0	0
Active Licensed	1.0	1.0	0	0	0	0
-Shortage/+Surplus	-88%	*	-100%	-100%	0	0
PHYSICIANS' OFFICES						
All Positions						
Requirements	23.5	11.7	5.9	5.9	0	7.0
Active Licensed	29.5	27.5	2.0	0	0	18.5
-Shortage/+Surplus	+25%	+138%	-66%	-100%	0	+164%
SCHOOL NURSE						
Requirements	38.2	0	32.7	5.5	0	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	0
OCCUPATIONAL/INDUSTRIAL						
Requirements	21.3	0	18.3	3.0	0	0
Active Licensed	13.5	13.5	0	0	0	0
-Shortage/+Surplus	-37%	*	-100%	-100%	0	0
PRIVATE DUTY						
Requirements	14.3	11.4	2.9	0	0	0
Active Licensed	4.0	3.0	1.0	0	0	4.0
-Shortage/+Surplus	-72%	-74%	-66%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 13

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY
by Employment Setting, Position, and Educational Level

1981 -- DISTRICT XI
Big Sandy

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	312.0	222.7	72.8	16.5	0	70.6
Active Licensed	86.0	80.5	5.5	0	0	263.0
-Shortage/+Surplus	-72%	-64%	-92%	-100%	0	+273%
Mid-level Supervisor						
Requirements	40.4	0	30.3	10.1	0	0
Active Licensed	88.0	83.0	5.0	0	0	8.0
-Shortage/+Surplus	+118%	*	-83%	-100%	0	*
Executive Nurse Administrator						
Requirements	24.1	0	6.8	16.5	.8	0
Active Licensed	9.0	6.0	3.0	0	0	0
-Shortage/+Surplus	-63%	*	-56%	-100%	-100%	0
Staff Development						
Requirements	10.0	0	6.4	3.6	0	0
Active Licensed	2.0	2.0	0	0	0	0
-Shortage/+Surplus	-80%	*	-100%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	133.7	4.8	74.7	54.2	0	5.0
Active Licensed	23.5	18.0	4.0	1.5	0	12.0
-Shortage/+Surplus	-82%	+308%	-95%	-97%	0	+140%

District XI (continued)	Total RNs	RN Educational Level				LPN
		AD/DIP	BSN	MSN	DOC	
Executive Nurse Administrator						
Requirements	8.0	0	0	7.6	.4	0
Active Licensed	1.0	1.0	0	0	0	0
-Shortage/+Surplus	-88%	*	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	23.2	19.1	4.1	0	0	32.8
Active Licensed	11.0	10.0	1.0	0	0	42.0
-Shortage/+Surplus	-53%	-48%	-76%	0	0	+28%
Executive Nurse Administrator						
Requirements	12.0	0	9.0	3.0	0	0
Active Licensed	0	0	0	0	0	1.0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	30.3	15.1	7.6	7.6	0	9.1
Active Licensed	18.5	17.5	1.0	0	0	50.0
-Shortage/+Surplus	-39%	+16%	-87%	-100%	0	+450%
SCHOOL NURSE						
Requirements	52.9	0	45.3	7.6	0	0
Active Licensed	5.0	5.0	0	0	0	4.0
-Shortage/+Surplus	-91%	*	-100%	-100%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	27.3	0	23.4	3.9	0	0
Active Licensed	3.0	3.0	0	0	0	0
-Shortage/+Surplus	-89%	*	-100%	-100%	0	0
PRIVATE DUTY						
Requirements	18.5	14.8	3.7	0	0	0
Active Licensed	0	0	0	0	0	3.0
-Shortage/+Surplus	-100%	-100%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 14

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY
by Employment Setting, Position, and Educational Level

1981 -- DISTRICT XII
Kentucky River

	Total	RN Educational Level				
	RNs	AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	149.9	107.8	34.3	7.8	0	34.7
Active Licensed	93.5	70.0	17.5	3.0	2.0	141.0
-Shortage/+Surplus	-38%	-35%	-49%	-62%	*	+306%
Mid-level Supervisor						
Requirements	17.5	0	13.1	4.4	0	0
Active Licensed	29.0	26.5	2.5	0	0	1.0
-Shortage/+Surplus	+66%	*	-81%	-100%	0	*
Executive Nurse Administrator						
Requirements	14.1	0	6.8	7.0	.3	0
Active Licensed	3.0	3.0	0	0	0	0
-Shortage/+Surplus	-79%	*	-100%	-100%	-100%	0
Staff Development						
Requirements	5.0	0	3.6	1.4	0	0
Active Licensed	1.0	1.0	0	0	0	0
-Shortage/+Surplus	-80%	*	-100%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	98.7	3.6	55.1	40.0	0	3.7
Active Licensed	34.5	27.5	5.0	2.0	0	18.5
-Shortage/+Surplus	-65%	+664%	-91%	-95%	0	+400%

		RN Educational Level				
District XII (continued)	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	11.1	0	0	10.5	.6	0
Active Licensed	1.5	1.5	0	0	0	0
-Shortage/+Surplus	-86%	*	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	20.3	17.0	3.3	0	0	21.2
Active Licensed	11.0	7.0	4.0	0	0	29.5
-Shortage/+Surplus	-46%	-59%	+21%	0	0	+39%
Executive Nurse Administrator						
Requirements	19.8	0	11.3	8.5	0	0
Active Licensed	1.0	1.0	0	0	0	0
-Shortage/+Surplus	-95%	*	-100%	-100%	0	0
PHYSICIANS' OFFICES						
All Positions						
Requirements	16.7	8.3	4.2	4.2	0	5.0
Active Licensed	10.0	7.0	2.0	1.0	0	22.0
-Shortage/+Surplus	-40%	-16%	-52%	-76%	0	+340%
SCHOOL NURSE						
Requirements	40.6	0	34.7	5.8	0	0
Active Licensed	7.0	6.0	1.0	0	0	3.0
-Shortage/+Surplus	-84%	*	-97%	-100%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	19.5	0	16.7	2.8	0	0
Active Licensed	0	0	0	0	0	2.0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	-100%
PRIVATE DUTY						
Requirements	13.6	10.9	2.7	0	0	0
Active Licensed	1.0	1.0	0	0	0	0
-Shortage/+Surplus	-93%	-91%	-100%	0	0	0

*Requirements at this educational level for this position are zero.

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REPORT 15

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY

by Employment Setting, Position, and Educational Level

1981 -- DISTRICT XIII
Cumberland Valley

		RN				
		Educational Level				
	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	358.0	259.3	80.3	18.4	0	83.6
Active Licensed	215.5	193.0	19.5	3.0	0	224.5
-Shortage/+Surplus	-40%	-26%	-76%	-84%	0	+169%
Mid-level Supervisor						
Requirements	40.7	0	30.5	10.2	0	0
Active Licensed	89.0	80.0	9.0	0	0	10.5
-Shortage/+Surplus	+119%	*	-70%	0	0	*
Executive Nurse Administrator						
Requirements	31.1	0	15.8	14.7	.5	0
Active Licensed	10.0	8.0	2.0	0	0	1.0
-Shortage/+Surplus	-68%	*	-87%	-100%	-100%	*
Staff Development						
Requirements	11.0	0	7.9	3.1	0	0
Active Licensed	2.0	2.0	0	0	0	0
-Shortage/+Surplus	-82%	*	-100%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	167.1	6.2	93.2	67.7	0	6.4
Active Licensed	52.0	44.5	6.5	1.0	0	23.0
-Shortage/+Surplus	-69%	+617%	-93%	-99%	0	+259%

District XIII (continued)	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
Executive Nurse Administrator						
Requirements	14.0	0	0	13.3	.7	0
Active Licensed	1.0	1.0	0	0	0	0
-Shortage/+Surplus	-93%	*	0	-100%	-100%	0
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	47.6	39.1	8.5	0	0	67.9
Active Licensed	16.5	16.5	0	0	0	62.5
-Shortage/+Surplus	-65%	-58%	-100%	0	0	-8%
Executive Nurse Administrator						
Requirements	16.0	0	12.0	4.0	0	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	-100%	-100%	0	0
PHYSICIANS' OFFICES						
All Positions						
Requirements	32.8	16.4	8.2	8.2	0	9.8
Active Licensed	34.5	29.0	5.0	.5	0	41.0
-Shortage/+Surplus	+5%	+77%	-39%	-94%	0	+318%
SCHOOL NURSE						
Requirements	66.2	0	56.7	9.5	0	0
Active Licensed	10.0	9.0	1.0	0	0	1.0
-Shortage/+Surplus	-85%	*	-98%	-100%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	33.1	0	28.4	4.7	0	0
Active Licensed	2.0	2.0	0	0	0	1.0
-Shortage/+Surplus	-94%	*	-100%	-100%	0	*
PRIVATE DUTY						
Requirements	23.0	18.4	4.6	0	0	0
Active Licensed	1.0	1.0	0	0	0	9.0
-Shortage/+Surplus	-96%	-95%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

REPORT 16

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY by Employment Setting, Position, and Educational Level

1981 -- DISTRICT XIV
Lake Cumberland

	Total	RN Educational Level				
	RNs	**AD/DIP**	**BSN**	**MSN**	**DOC**	**LPN**
HOSPITAL						
General Duty-Staff						
Requirements	225.3	163.2	50.5	11.6	0	49.4
Active Licensed	132.5	117.5	14.0	0	1.0	98.0
-Shortage/+Surplus	-41%	-28%	-72%	-100%	*	+98%
Mid-level Supervisor						
Requirements	26.6	0	19.9	6.7	0	0
Active Licensed	64.0	60.5	3.5	0	0	9.0
-Shortage/+Surplus	+140%	*	-82%	-100%	0	*
Executive Nurse Administrator						
Requirements	26.0	0	15.8	10.0	.2	0
Active Licensed	5.0	5.0	0	0	0	0
-Shortage/+Surplus	-81%	*	-100%	-100%	-100%	0
Staff Development						
Requirements	9.0	0	6.6	2.4	0	0
Active Licensed	1.0	0	1.0	0	0	0
-Shortage/+Surplus	-89%	0	-85%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	133.4	4.7	70.1	58.6	0	4.9
Active Licensed	42.5	35.5	6.0	1.0	0	4.5
-Shortage/+Surplus	-68%	+655%	-91%	-98%	0	-8%

		RN Educational Level				
District XIV (continued)	Total RNs	AD/DIP	BSN	MSN	DOC	LPN

Executive Nurse Administrator

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	11.0	0	0	10.5	.5	0
Active Licensed	0	0	0	0	0	0
-Shortage/+Surplus	-100%	0	0	-100%	-100%	0

LONG-TERM CARE--NURSING HOMES

Staff

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	48.3	40.0	8.3	0	0	62.9
Active Licensed	20.5	20.0	.5	0	0	64.5
-Shortage/+Surplus	-58%	-50%	-94%	0	0	+3%

Executive Nurse Administrator

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	22.0	0	16.5	5.5	0	0
Active Licensed	2.0	1.0	0	1.0	0	2.0
-Shortage/+Surplus	-91%	*	-100%	-82%	0	*

PHYSICIANS' OFFICES

All Positions

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	22.7	11.3	5.7	5.7	0	6.8
Active Licensed	19.0	17.5	1.5	0	0	21.0
-Shortage/+Surplus	-16%	+55%	-74%	-100%	0	+208%

SCHOOL NURSE

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	44.7	0	21.9	3.7	0	0
Active Licensed	4.5	3.5	0	1.8	0	0
-Shortage/+Surplus	-90%	*	-100%	-51%	0	0

OCCUPATIONAL/INDUSTRIAL

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	25.6	0	21.9	3.7	0	0
Active Licensed	3.0	3.0	0	0	0	2.0
-Shortage/+Surplus	-88%	*	-100%	-100%	0	*

PRIVATE DUTY

	Total RNs	AD/DIP	BSN	MSN	DOC	LPN
Requirements	17.4	13.9	3.5	0	0	0
Active Licensed	.5	.5	0	0	0	0
-Shortage/+Surplus	-97%	-96%	-100%	0	0	0

*Requirements at this educational level for this position are zero.

REPORT 17

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT ACTIVE LICENSED RNs AND LPNs EMPLOYED IN KENTUCKY
by Employment Setting, Position, and Educational Level

1981 -- DISTRICT XV
Bluegrass

	Total RNs	RN Educational Level AD/DIP	BSN	MSN	DOC	LPN
HOSPITAL						
General Duty-Staff						
Requirements	1722.0	1208.7	405.9	107.4	0	362.9
Active Licensed	1580.5	1110.5	435.0	29.0	1.0	629.0
-Shortage/+Surplus	-8%	-8%	+7%	-73%	*	+73%
Mid-level Supervisor						
Requirements	275.9	0	206.9	69.0	0	0
Active Licensed	467.0	340.0	121.0	4.0	0	36.0
-Shortage/+Surplus	-69%	*	-42%	-94%	0	*
Executive Nurse Administrator						
Requirements	73.0	0	24.8	46.3	2	0
Active Licensed	49.5	22.5	12.0	15.0	0	2.0
-Shortage/+Surplus	-34%	*	-52%	-68%	-100%	0
Staff Development						
Requirements	38.0	0	20.2	17.8	0	0
Active Licensed	21.5	10.0	11.5	0	0	0
-Shortage/+Surplus	-43%	*	-43%	-100%	0	0
COMMUNITY HEALTH						
Staff						
Requirements	401.4	14.6	224.0	162.8	0	15.1
Active Licensed	128.5	76.0	45.0	6.5	0	21.0
-Shortage/+Surplus	-68%	+420%	-80%	-96%	0	+39%

District XV (continued)	Total RNs	RN Educational Level				LPN
		AD/DIP	BSN	MSN	DOC	
Executive Nurse Administrator						
Requirements	22.0	0	0	20.9	1.1	0
Active Licensed	13.0	2.0	6.0	5.0	0	.5
-Shortage/+Surplus	-41%	*	*	-76%	-100%	*
LONG-TERM CARE--NURSING HOMES						
Staff						
Requirements	132.6	109.0	23.6	0	0	190.7
Active Licensed	71.0	66.5	3.5	0	0	129.5
-Shortage/+Surplus	-47%	-39%	-85%	0	0	+32%
Executive Nurse Administrator						
Requirements	62.0	0	46.5	15.5	0	0
Active Licensed	18.5	15.5	3.0	0	0	2.5
-Shortage/+Surplus	-70%	*	-94%	-100%	0	*
PHYSICIANS' OFFICES						
All Positions						
Requirements	245.2	122.6	61.3	61.3	0	73.6
Active Licensed	124.5	102.5	19.0	2.0	0	87.5
-Shortage/+Surplus	-49%	-16%	-69%	-97%	0	+19%
SCHOOL NURSE						
Requirements	153.2	0	131.3	21.9	0	0
Active Licensed	35.0	22.5	11.0	.5	0	5.0
-Shortage/+Surplus	-77%	*	-92%	-98%	0	*
OCCUPATIONAL/INDUSTRIAL						
Requirements	83.7	0	71.7	12.0	0	0
Active Licensed	48.0	45.5	2.5	0	0	24.5
-Shortage/+Surplus	-43%	*	-97%	-100%	0	*
PRIVATE DUTY						
Requirements	55.4	44.3	11.1	0	0	0
Active Licensed	18.0	18.0	0	0	0	35.5
-Shortage/+Surplus	-68%	-59%	-100%	0	0	*

*Requirements at this educational level for this position are zero.

EXPLANATORY INFORMATION
for
REPORTS 2 through 17

1. Annual nurse licensure analysis compiled by the Council on Higher Education. Data source: Kentucky Board of Nursing licensure master file.

2. "Total R.N.'s" for "Active Licensed" includes R.N.'s at the four educational levels plus R.N.'s who gave "no response" for their educational level on the Kentucky Board of Nursing Licensure Renewal Application.

3. For comparison purposes:

REQUIREMENTS MODEL		LICENSURE
AD/DIP	=	AD, Diploma, BS Other
BSN	=	BSN
MSN	=	MSN, MS Other
DOC	=	Doctorate
L.P.N.	=	All L.P.N.'s
Hospital: General Duty Staff	=	Hospital: General Duty Staff, Other Specialists no response (as to position)
Hospital: Mid-Level Supervisor	=	Hospital: Supervisor or Assistant, Head Nurse or Assistant
Hospital: Executive Nurse Administrator	=	Hospital: Administrator or Assistant
Hospital: Staff Development	=	Hospital: Instructor
Community Health: Staff	=	Community Health and Public Health: All categories except Administrator or Assistant and Consultant
Community Health: Executive Nurse Administrator	=	Community Health and Public Health: Administrator or Assistant
Nursing Homes/Long-term Care: Staff	=	Nursing Homes: All categories except Administrator or Assistant and Consultant
Nursing Homes/Long-term Care: Executive Nurse Administrator	=	Nursing Home: Administrator or Assistant
Physicians' Office	=	Physicians' Offices: All positions except Consultants
School Nurse	=	School Nurse: All positions except Consultants
Occupational/Industrial	=	Industrial: All positions except Consultants
Private Duty	=	Private Duty: All positions except Consultants
School of Nursing: Faculty	=	School of Nursing: All positions except Administrator or Assistant and Consultant
School of Nursing: Administrator	=	School of Nursing: Administrator or Assistant

4. School of Nursing projections have been made at the state level only.

Chapter 7

Comparisons of Nursing Manpower Requirements and Resources 1985

I. INTRODUCTION

Nursing manpower resources estimated to be available in 1985 are based on historical data of licensed nursing manpower employed in nursing and nursing graduations, and, estimated future nursing graduations, all relative to Kentucky. The resources calculated for 1985 assume that past patterns of nursing employment and graduations will continue to 1985, and that estimated graduations from 1982 to 1985 are accurate.

II. REPORT 18 - COMPARISONS OF FULL-TIME RN AND LPN LOWER BOUND AND UPPER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT RN AND LPN RESOURCE PROJECTIONS, 1985

Total nursing resources at the State and District levels are compared with requirement projections for lower bound and upper bound readings, as illustrated in REPORT 18. For the educational vector, the projections for registered nurses with master's in nursing degrees and doctoral-level degrees are combined under the heading HIGHER DEGREE. This is consistent with the Resource model proposed in the WICHE resource study.

The findings indicate that,

1. At the State level for lower and upper bound parameters, there will be:
   - an overall shortage of registered nurses,
   - a surplus of associate degree and diploma nurses,
   - a shortage of nurses prepared at the baccalaureate and higher degree levels; and,
   - a surplus of licensed practical nurses.
2. At the District levels for lower bound parameters, there will be:
   - an overall shortage of registered nurses in fourteen districts;
   - a surplus of associate degree/diploma nurses in fourteen districts;
   - a shortage of nurses prepared at the baccalaureate and higher degree levels in all districts; and,
   - a surplus of licensed practical nurses in fourteen districts.
3. At the District levels for upper bound parameters of nursing manpower resources:
   - three districts will have a shortage instead of a surplus of associate degree/diploma nurses; and,
   - three districts will have a shortage instead of a surplus of licensed practical nurses.

REPORT 18

COMPARISONS OF FULL-TIME EQUIVALENT RN AND LPN LOWER BOUND AND UPPER BOUND REQUIREMENTS WITH FULL-TIME EQUIVALENT RN AND LPN RESOURCE PROJECTIONS

1985

	Total	RN Educational Level			
AREA	RNs	AD/DIP	BSN	HIGHER DEGREE	LPN
STATE TOTAL					
Lower Bound					
Requirements	20,087.4	8,474.0	7,526.1	4,087.4	4,213.3
Resources	15,951.0	12,183.0	2,690.0	1,078.0	6,877.0
-Shortage/+Surplus	-20.6%	+43.8%	-64.3%	-73.6%	+63.2
Upper Bound					
Requirements	28,843.3	10,876.9	10,495.7	5,470.7	5,958.4
Resources	15,951.0	12,183.0	2,690.0	1,078.0	6,877.0
-Shortage/+Surplus	-44.7%	+12.0%	-74.4%	-80.3%	+15.4%
DISTRICT I - PURCHASE					
Lower Bound					
Requirements	1,141.1	535.4	418.1	187.6	217.8
Resources	829.9	589.7	179.7	60.5	621.8
-Shortage/+Surplus	-27.3%	+10.1%	-57.0%	-67.8%	+185.5%
Upper Bound					
Requirements	1508.9	693.4	566.3	249.2	332.3
Resources	829.9	589.7	179.7	60.5	621.8
-Shortage/+Surplus	-45.0%	-15.0%	-68.4%	-75.7%	+87.1%

	Total	RN Educational Level			
	RNs	AD/DIP	BSN	HIGHER DEGREE	LPN

DISTRICT II - PENNYRILE

	Total RNs	AD/DIP	BSN	HIGHER DEGREE	LPN
Lower Bound					
Requirements	830.0	325.5	340.2	164.3	158.3
Resources	619.3	510.5	81.2	27.6	588.7
-Shortage/+Surplus	-25.4%	+56.8%	-76.1%	-83.2%	+271.9%
Upper Bound					
Requirements	1,173.1	434.4	494.1	224.7	284.9
Resources	619.3	510.5	81.2	27.6	588.7
-Shortage/+Surplus	-47.2%	+17.5%	-83.6%	-87.7%	+106.6%

DISTRICT III - GREEN RIVER

	Total RNs	AD/DIP	BSN	HIGHER DEGREE	LPN
Lower Bound					
Requirements	1,048.6	458.6	402.4	188.0	192.9
Resources	742.6	616.5	101.4	24.7	419.5
-Shortage/+Surplus	-29.2%	+34.4%	-74.8%	-86.9%	+117.5%
Upper Bound					
Requirements	1,405.0	588.1	250.5	266.3	292.3
Resources	742.6	616.5	101.4	24.7	419.5
-Shortage/+Surplus	-47.1%	+4.8%	-59.5%	-90.7%	+43.5%

DISTRICT IV - BARREN RIVER

	Total RNs	AD/DIP	BSN	HIGHER DEGREE	LPN
Lower Bound					
Requirements	2,427.5	1,448.7	712.5	266.3	199.4
Resources	678.5	583.6	47.3	47.6	443.6
-Shortage/+Surplus	-31.6%	+37.4%	-87.7%	-73.9%	+122.5%
Upper Bound					
Requirements	1,347.8	564.9	537.6	245.2	317.7
Resources	678.5	583.6	47.3	47.6	443.6
-Shortage/+Surplus	-49.7%	+3.3%	-91.2%	-80.6%	+39.6%

AREA	Total RNs	RN Educational Level AD/DIP	BSN	HIGHER DEGREE	LPN
DISTRICT V - LINCOLN TRAIL					
Lower Bound					
Requirements	686.6	239.1	301.0	146.5	115.9
Resources	499.1	437.4	47.9	13.8	189.0
-Shortage/+Surplus	-27.3%	+82.9%	-84.1%	-90.6%	+63.1%
Upper Bound					
Requirements	974.6	331.1	437.8	205.4	199.0
Resources	499.1	437.4	47.9	13.8	189.0
-Shortage/+Surplus	-48.8%	+32.1%	-89.0%	-93.2%	-5.0%
DISTRICT VI - FALLS					
Lower Bound					
Requirements	8,531.4	4,355.9	2,954.5	1,221.0	1,678.9
Resources	5,230.9	3,933.9	983.7	313.3	1,255.7
-Shortage/+Surplus	-38.7%	-9.7%	-66.7%	-74.3%	-25.2%
Upper Bound					
Requirements	10,639.6	5,250.7	3,791.5	1,597.4	2,148.4
Resources	5,230.9	3,933.9	983.7	313.3	1255.7
-Shortage/+Surplus	-50.8%	-25.1%	-74.1%	-80.4%	-41.6%
DISTRICT VII - NORTHERN KENTUCKY					
Lower Bound					
Requirements	1,440.4	607.3	545.3	247.8	256.3
Resources	1,075.4	940.5	95.0	39.9	597.6
-Shortage/+Surplus	-25.3%	+54.9%	-82.6%	-83.9%	+133.2%
Upper Bound					
Requirements	1,890.2	783.4	767.0	339.8	398.0
Resources	1,075.4	940.5	95.0	39.9	597.6
-Shortage/+Surplus	-43.1%	+20.1%	-87.6%	-88.3%	+50.2%

	Total	RN Educational Level			
AREA	RNs	AD/DIP	BSN	HIGHER DEGREE	LPN
DISTRICT VIII - BUFFALO TRACE					
Lower Bound					
Requirements	203.1	78.1	82.0	43.1	36.0
Resources	177.3	149.9	15.6	11.8	59.8
-Shortage/+Surplus	-12.7%	+91.9%	-81.0%	-72.6%	+66.1%
Upper Bound					
Requirements	278.2	103.8	116.9	57.5	58.6
Resources	177.3	149.9	15.6	11.8	59.8
-Shortage/+Surplus	-36.3%	+44.4%	-86.7%	-79.5%	+2.0%
DISTRICT IX - GATEWAY					
Lower Bound					
Requirements	269.2	104.6	111.0	54.6	49.8
Resources	203.2	153.5	12.6	37.1	88.0
-Shortage/+Surplus	-24.5%	+46.7%	-88.6%	-32.1%	+76.7%
Upper Bound					
Requirements	388.3	142.7	170.6	75.0	98.9
Resources	203.2	153.5	12.6	37.1	88.0
-Shortage/+Surplus	-47.7%	+7.6%	-92.6%	-50.5%	-11.0%
DISTRICT X - FIVCO					
Lower Bound					
Requirements	536.0	214.1	221.7	100.3	91.7
Resources	454.8	408.1	33.9	12.8	226.3
-Shortage/+Surplus	-15.1%	+90.6%	-84.7%	-87.2%	+146.8%
Upper Bound					
Requirements	734.3	274.9	319.2	140.2	147.7
Resources	454.8	408.1	33.9	12.8	226.3
-Shortage/+Surplus	-38.1%	+48.5%	-89.4%	-90.9%	+53.2%

	Total	RN Educational Level			
AREA	RNs	AD/DIP	BSN	HIGHER DEGREE	LPN
DISTRICT XI - BIG SANDY					
Lower Bound					
Requirements	737.2	294.0	299.6	143.5	125.7
Resources	341.4	299.7	31.2	10.5	426.4
-Shortage/+Surplus	-53.7%	+1.9%	-89.6%	-92.7%	+239.2%
Upper Bound					
Requirements	1,000.4	369.7	433.3	197.5	199.3
Resources	341.4	299.7	31.2	10.5	426.4
-Shortage/+Surplus	-65.9%	-18.9%	-92.8%	-94.7%	+113.9%
DISTRICT XII - KENTUCKY RIVER					
Lower Bound					
Requirements	433.4	154.7	186.0	90.0	67.7
Resources	314.7	224.2	58.6	31.9	257.2
-Shortage/+Surplus	-27.4%	+44.9%	-68.5%	-64.6%	+279.9%
Upper Bound					
Requirements	620.5	204.1	285.7	130.7	129.3
Resources	314.7	224.2	58.6	31.9	257.2
-Shortage/+Surplus	-49.3%	+9.8%	-79.5%	-75.6%	+98.9%
DISTRICT XIII - CUMBERLAND VALLEY					
Lower Bound					
Requirements	881.7	355.3	359.0	167.4	176.0
Resources	589.5	482.4	69.9	37.2	447.0
-Shortage/+Surplus	-33.1%	+35.8%	-80.5%	-77.8%	+153.9%
Upper Bound					
Requirements	1,222.4	463.0	526.3	233.1	293.2
Resources	589.5	482.4	69.9	37.2	447.0
-Shortage/+Surplus	-51.8%	+4.2%	-86.7%	-84.0%	+52.5%

	Total	RN Educational Level			
AREA	RNs	AD/DIP	BSN	HIGHER DEGREE	LPN
DISTRICT XIV - LAKE CUMBERLAND					
Lower Bound					
Requirements	631.5	243.8	265.3	122.5	130.5
Resources	404.0	343.6	38.2	22.2	217.3
-Shortage/+Surplus	-36.0%	+40.9%	-85.6%	-81.9%	+66.5%
Upper Bound					
Requirements	873.0	330.7	374.5	167.8	214.6
Resources	404.0	343.6	38.2	22.2	217.3
-Shortage/+Surplus	-53.7%	+3.9%	-89.8%	-86.8%	+1.3%
DISTRICT XV - BLUEGRASS					
Lower Bound					
Requirements	3,423.3	1,567.6	1,273.0	582.0	677.1
Resources	3,668.8	2,405.1	877.5	385.2	1,129.2
-Shortage/+Surplus	+7.2%	+53.5%	-31.1%	-33.9%	+66.8%
Upper Bound					
Requirements	4,482.7	1,956.3	1,746.1	780.7	996.7
Resources	3,668.8	2,406.1	877.5	385.2	1,129.2
-Shortage/+Surplus	-18.2%	+23.0%	-49.7%	-50.7%	+13.3%

CHAPTER 8

Summary, Findings, Conclusions, and Recommendations

I. SUMMARY OF STUDY

This study has addressed the nursing manpower requirements and resources for Kentucky using modified versions of the nursing manpower requirements and resources models developed by the Western Interstate Commission on Higher Education and the National Center for Higher Education Management Systems. The purpose of the study has been to project the nursing manpower which will be needed in Kentucky by 1985, and to project the nursing manpower expected to be employed in 1985. Findings of the study can be used by policy-makers to formulate policies and guidelines for further development of the nursing education system and nurse utilization within practice settings at state, regional and local levels.

The rationale underlying projections of nursing manpower needed (nurse requirements) addresses factors of population, nurse staffing patterns, types of nurse practice settings and roles, complexity of nursing care, and, the nursing education system. Nurse requirements have been estimated by educational level for practice setting categories and positions at State and Area Development District levels. The rationale underlying distribution of registered nurse manpower addresses the type of practice setting and the nature of nursing practice associated with that setting, the assumed responsibilities of given nursing positions, and the knowledge/skill content of nursing program levels within the nursing education system.

The rationale underlying the projections of nursing manpower expected to be employed in nursing in 1985 (nursing resources) addresses past nursing manpower supply, past nursing graduations, and estimated future nursing graduations. Additional data from surveys of all nursing programs in Kentucky reflect the influence of various program situations upon the number of students graduated, i.e. less-than capacity enrollment, shortage of qualified faculty.

Findings of the study indicate a statewide shortage of registered nurses and a surplus of licensed practical nurses. Recommended parameters for nurse staffing are termed lower bound and upper bound requirements. Projections for lower bound requirements for 1985 show a shortage of 4,136.4 FTE RNs and a surplus of 2,663.7 licensed practical nurses. For upper bound nurse requirements the shortage of registered nurses increases to 12,892.3 FTE RNs, while the surplus of licensed practical nurses is reduced to 918.6 FTE LPNs. From the perspective of educational preparation the shortage of nurses prepared at the baccalaureate and higher degree levels in nursing is most apparent, while a surplus of associate degree and diploma nurses is predicted.

The availability of nurse licensure data permitted a comparison of nurses employed in nursing in 1981 with nurse requirements calculated for 1981. A pattern of nurse shortages and surpluses similar to those predicted for 1985 were among the findings for 1981. However, the data regarding positions held by nurses in 1981 indicated that of the total number of FTE RNs prepared at the associate degree/ diploma levels, 23 percent are in positions designated as requiring baccalaureate and higher degree preparation; and, of the total number of FTE LPNs, seven percent are in positions designated as registered nurse positions.

In projecting nursing manpower requirements and resources, consideration has been given to the demographic configuration of Kentucky, the health care facilities, assumptions about those facilities and the educational system which produces nurses for the health care delivery system in Kentucky. This study represents an indepth analysis of nursing manpower needs and resources in Kentucky based on Kentucky-specific data and generated through a population-based model designed specifically for state level use.

II. FINDINGS

Findings of this nursing manpower requirements and resources study have been presented in detail as Reports 1 through 18 for the years 1981 and 1985 at the State and Area Development District levels. Predictably, the findings for 1985 were generally similar to those for 1981. Major findings reported here for the State level are, for the most part, representative of findings for the District levels:

1. An overall shortage of 4,136.4 full-time equivalent registered nurses is projected for 1985 at the lower bound requirement parameter.

2. A surplus of 3,709 full-time equivalent associate degree and hospital diploma-prepared registered nurses is projected for 1985 at the lower bound requirement parameter.

3. A shortage of 4,836.1 full-time equivalent baccalaureate degree-prepared registered nurses is projected for 1985 at the lower bound requirement parameter.

4. A shortage of 3009.4 full-time equivalent registered nurses prepared at the masters and doctoral degree levels is projected for 1985 at the lower bound requirement parameter.

5. A surplus of 2,663.7 full-time equivalent licensed practical nurses is projected for 1985 at the lower bound requirements parameter.

6. Lower bound requirements for 1981 as compared with RN licensure data for 1981 indicated a shortage of FTE ADN/Dip RNs ranked by major practice area by position as follows:

Area	Position	# FTE RN
Hospital	Staff	802.7
Long-Term Care	Staff	283.8

7. Lower bound requirements for 1981 as compared with RN licensure data for 1981 indicated a shortage of FTE BSN RNs ranked by major practice area by position as follows:

Area	Position	# FTE RN
Community Health	Staff	1,334.2
Hospital	Staff	1,053.0
School Nursing	All	851.8
Hospital	Mid-Level Supervisor	699.8
Long-Term Care	Exec. Administrator	276.0
Long-Term Care	Staff	104.4
Hospital	Exec. Administrator	90.0
Hospital	Staff Development	67.3

8. Lower bound requirements for 1981 as compared with RN licensure data for 1981 indicated a shortage of FTE MSN RNs ranked by major practice area by position as follows:

Area	Position	# FTE RNs
Community Health	Staff	1,098.8
Hospital	Staff	502.7
Hospital	Mid-Level Supervisor	317.8
Hospital	Exec. Administrator	303.5
Community Health	Exec. Administrator	148.6
School Nursing	All	143.4
Long-Term Care	Exec. Administrator	91.5
Hospital	Staff Development	68.2
School of Nursing	Faculty	28.0

9. Lower bound requirements for 1981 as compared with RN licensure data for 1981 indicated a shortage of FTE Doct. RNs ranked by major practice area by position as follows:

Area	Position	# FTE RNs
School of Nursing	Faculty	53.7
Hospital	Exec. Administrator	15.8
Community Health	Exec. Administrator	8.4
School of Nursing	Exec. Administrator	7.8

10. In 1981 almost one-fourth of all FTE ADN/Dip RNs were in positions designated as requiring baccalaureate and higher degree level nursing preparation.

11. In 1981 approximately seven percent of all FTE LPNs were in positions designated as RN positions.

III. CONCLUSIONS & RECOMMENDATIONS

The findings suggest an underproduction of nurses prepared at the baccalaureate and higher degree levels, an overproduction of nurses prepared at the associate degree/ hospital diploma levels, and, an overproduction of practical nurses. The findings also suggest inappropriate utilization of registered nurses and practical nurses in the majority of practice settings, with the tendency of placing nurses in positions requiring knowledge and skills beyond the nurse's level of academic preparation.

A continuation of recent patterns of nursing program graduations and annual increases in the nursing manpower pool will not result in the numbers and types of nurses projected to be required in 1985 in the Commonwealth of Kentucky. The percentages of "mix" of registered nurses by educational level, as calculated for nursing manpower resources in 1985, will advance further, but in reverse, from the "mix" projected for 1985 registered nurse requirements. The ratio of registered nurses to licensed practical nurses will also move in reverse from the ratio projected for 1985, resulting in 2.32 FTE RNs per one FTE LPN instead of the requirement projections of 4.82 FTE RNs per one FTE LPN.

The data regarding nursing manpower resources clearly indicate the need for an increase in the number of new nurses graduated, an increase in the number of nurses prepared at the baccalaureate and higher degree levels and strategies to reverse the trends of part-time employment in nursing, and non-nursing employment. The utilization of nursing manpower in practice settings should be evaluated against standards of nursing preparation commensurate with nursing responsibilities, and measures taken to insure the appropriate utilization of nursing personnel.

These nurse requirement and resource projections are based on diverse data and assumptions about the health care system. Future studies using the Kentucky Manpower Requirements model could be enhanced by 1) expanding health care facility data and 2) validating the Criteria for Staffing component of the model. At present, facility data are limited in terms of the types of nursing personnel needed in primary care settings, and, acute care bed discrimination by clinical specialty. The Criteria for Staffing component of the model is vulnerable to the ongoing change of the health care system and should be reassessed periodically in actual practice settings.

Based on the data input and findings of this study, the following recommendations are presented:

1. The full-time equivalent employed (in nursing) registered nurse population for Kentucky should increase by 4,136.4 RNs for a total of 20,087.4 RNs with proportionate educational representation of:

   42.2% Associate Degree/Hospital Diploma,
   37.4% Baccalaureate Degree, and
   20.3% Masters and Doctoral Degrees.

   This will result in a statewide ratio of 1 BSN RN:1.12 ADN/DIP RN, and 1 BSN RN: 0.54 MSN/DOCT RN.

2. The number of FTE employed registered nurses prepared at the baccalaureate in nursing degree level should be increased by 64 percent (4,836.1 RNs) by 1985:

   a. Baccalaureate degree programs which are established and nationally accredited should initiate or expand outreach (satellite) programs in appropriate geographical areas of Kentucky. Such programs should demonstrate the same standards of quality as the parent program and be funded accordingly.

   b. Baccalaureate degree nursing programs having less than capacity enrollment should identify causative factors and initiate appropriate remedial measures.

   c. Baccalaureate degree nursing programs that are operating at maximum capacity by virtue of funding limitations should seek the resources necessary for expansion of student enrollment.

d. Articulation agreements between associate degree and baccalaureate degree nursing programs should be established to foster and facilitate educational mobility for the associate degree nurse graduate.

e. Baccalaureate degree programs should seek inter-institutional uniformity of policies and practices to foster and facilitate the educational mobility of the hospital diploma-prepared registered nurse.

f. Baccalaureate degree programs should seek alliances with rural hospitals designed to enrich student clinical experience, encourage educational advancement of nurses and foster utilization of registered nurses prepared at the baccalaureate degree level.

g. Health facilities which employ registered nurses should establish policies and develop plans that facilitate educational advancement of nurse employees and enhance recruitment and retention of nurses.

3. The number of FTE employed registered nurses prepared at the masters and doctoral degree levels should be increased by 74 percent (3,009.4 RNs) by 1985.

   a. The University of Kentucky College of Nursing should continue to expand its outreach masters degree nursing program in appropriate geographical areas of Kentucky.

   b. Alternatives for increasing the number of doctorally prepared nurses should be explored, including development of a doctoral program at the University of Kentucky and/or expanding common market opportunities.

   c. Educational and health care facilities having nursing positions for which masters or doctoral degree preparation is indicated should establish policies and develop plans that facilitate educational advancement of nurse employees.

   d. The institutions offering graduate programs in nursing should explore innovative strategies for curriculum implementation that conserve limited nursing faculty resources without jeopardy to the quality and integrity of nursing education.

4. The number of FTE employed registered nurses prepared at the associate degree and hospital diploma levels should be reduced by 43.8 percent (3,709.0 RNs) by 1985.

a. Associate degree programs which have relatively small enrollments and/or graduating classes and are within reasonable geographic proximity of another associate degree program of similar or larger size should be merged with that program.

b. A moratorium should be placed on the development of new associate degree and/or hospital diploma nursing programs.

c. Universities having both associate degree and baccalaureate degree programs should consider the feasibility of offering the baccalaureate degree program only under a curriculum plan which accomodates generic as well as registered nurse students.

5. The number of FTE employed licensed practical nurses should be reduced by 63 percent (2,663.7 LPNs) with a desired ratio of 4.76 RNs:1 LPN by 1985:

a. A moratorium should be placed on the development of new practical nurse programs.

b. Articulation agreements between practical nursing and associate degree programs should be established to foster and facilitate educational mobility for the practical nursing program graduate.

c. Enrollment in practical nurse programs should be decreased and expansion of existing programs through outreach sites should be discouraged.

d. A research study to determine if continuance of practical nurse education is warranted in terms of cost-effectiveness and product utilization in the health care system should be initiated by vocational and higher education nurse educators and representatives of the health care system.

6. Avenues of financial assistance should be increased for individuals seeking entry into nursing education programs at both beginning and advanced levels:

a. Access of individuals to nursing education should be routinely examined to determine if rural nursing scholarship programs comparable to rural dental and medical scholarship programs are warranted.

b. Local communities should initiate and participate in planning that extends nursing practice capabilities in effectively meeting the health care needs of the community.

7. Health care and educational system policies and practices should endorse and facilitate congruency between the preparation of nurses and the responsibilities they assume in their practice of nursing.

   a. Employers of nurses should establish employment credential standards for nursing positions that are commensurate with the responsibilities of the position.

   b. Employers of nurses should encourage and facilitate educational advancement of nursing employees for purposes of promotion and/or equivalency of employee preparation/position responsibilities.

   c. Nurse educators and nursing service personnel should jointly establish a communication network and strategies that promote mutual knowledge and understanding of nursing education objectives, nursing service goals and the knowledge and skills essential to competent practice in the diverse nursing roles within the health care system.

   d. Health care professional associations should endorse and facilitate utilization of nursing personnel appropriate to preparation.

   e. Health care agencies should develop plans whereby the parameters of nursing expertise can be expanded to needed sectors of the health care delivery system, i.e. consultative services, consortia arrangements for inservice education, etc.

8. The Kentucky Nursing Manpower Requirements and Resources models should be subjected to continuing research and appropriate change for repetitive implementation in future years.

   a. Employers and educators of nurses should encourage and engage in research studies regarding effective nurse staffing patterns and utilization of nurses commensurate with preparation.

   b. Health care agencies should standardize and expand the utilization data pertinent to nursing manpower requirements planning.

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APPENDIX A

TYPES AND LOCATIONS OF NURSING PROGRAMS IN KENTUCKY

			(TYPE)						
ADD	HSA	COLLEGE/UNIVERSITY	AD	B2	BG	MSN	S/I	TOWN	COUNTY
I Purchase	W	Murray State University			X*	X	S	Murray	Calloway
		Paducah Community College	X*				S	Paducah	McCracken
II Pennyrile	W	Hopkinsville Community College	X				S	Hopkinsville	Christian
		Madisonville Community College (Pennyrile Regional Program)						Madisonville	Hopkins
III Green River	W	Henderson Community College	X				S	Henderson	Henderson
		Kentucky Wesleyan College	X				I	Owensboro	Daviess
IV Barren River	W	Western Kentucky University	X*	X*			S	Bowling Green	Warren
V Lincoln Trail	W	Elizabethtown Community College	X*				S	Elizabethtown	Hardin
VI Falls	W	Bellarmine College		X			I	Louisville	Jefferson
		Jefferson Community College	X*				S	Louisville	Jefferson
		Spalding College			X*		I	Louisville	Jefferson
		University of Louisville	X*	X		X	S	Louisville	Jefferson
		Baptist Hospital			Diploma*			Louisville	Jefferson
VII Northern Kentucky	C	Northern Kentucky University	X*	X			S	Highland Heights	Campbell
		Thomas More College			X		I	Ft. Mitchell	Kenton
VIII Buffalo Trace	E	Maysville Community College	X				S	Maysville	Mason
IX Gateway	E	Morehead State University	X				S	Morehead	Rowan

TYPES AND LOCATIONS OF NURSING PROGRAMS IN KENTUCKY

ADD	HSA	COLLEGE/UNIVERSITY	AD	B2	BG	MSN	S/I	TOWN	COUNTY
			(TYPE)						
X Fivco	E	Ashland Community College	X				S	Ashland	Boyd
XI Big Sandy	E	Prestonsburg Community College	X				S	Prestonsburg	Floyd
XII Kentucky River	E								
XIII Cumberland Valley	E	Cumberland College	X*				I	Williamsburg	Whitley
		Southeast Community College	X				S	Cumberland	Harlan
XIV Lake Cumberland	E	Somerset Community College	X				S	Somerset	Pulaski
XV Bluegrass	E	Berea College			X*		I	Berea	Madison
		Eastern Kentucky University	X*		X*		S	Richmond	Madison
		Kentucky State University	X*				S	Frankfort	Franklin
		Lexington Technical Institute	X*				S	Lexington	Fayette
		Midway College	X*				I	Midway	Woodford
		University of Kentucky		X*		X*	S	Lexington	Fayette

TOTALS		
	1	Diploma
	20	Associate Degree
	5	Baccalaurate Degree (for R.N.'s)
	5	Baccalaurate Degree (Generic)
	3	Master's Degree

LEGEND:
ADD – Area Development District
HSA – Health Systems Agency
    C – Corva
    E – East
    W – West
AD – Associate Degree in Nursing
B2 – Baccalaureate Degree in Nursing, 2-year, for Registered Nurses
BG – Baccalaureate Degree in Nursing, 4-year generic
S/I – State institution/Independent institution
*NLN Accredited

February, 1981 Compiled by · Council on Higher Education, Frankfort, Kentucky

APPENDIX B

Staffing Ratio Calculations

INPATIENT SERVICES

The Kentucky Nursing TAG accepted the basis of projections for inpatient services (hospitals) used by the WICHE Panel of Expert Consultants. The following conditions were assumed:

1) Staffing for a group of patients requires nurses on three shifts for each day;
2) One FTE nurse will work 1,800 hours per year on the average;
3) 4.9 FTE nurses are required to provide one nurse for each of the 21 shifts per week, based on the 1,800 hours of work (allows for standard work week, holidays, vacation, and sick leave taken.)

The figure of 1,800 hours used for Inpatient Services Staffing was a weighted average of the estimated number of hours worked per year based on surveys by the Bureau of Labor Statistics in selected standard metropolitan statistical areas. The figure corresponds to 45 working weeks, or 225 working days per year.

The derivation of FTE R.N.'s necessary to provide one R.N. on each shift is as follows:

21 shifts/week X 52 weeks/year = 1092 shifts/year
1800 hours/FTE R.N.'s/year ÷ 8 hours/shift = 225 shifts/FTE R.N./year
1092 shifts/year ÷ 225 shifts/FTE R.N.'s/year = 4.9 FTE R.N.'s

1. Long-Term Acute Care Hospitals

a. *Psychiatric*

The staffing ratio recommended by the national Panel for psychiatric units was used by the Kentucky TAG for psychiatric hospitals.

LOWER BOUND – 13 R.N.'s/100 patients
7.7 L.P.N.'s/10 DCC R.N.'s
UPPER BOUND – 22 R.N.'s/100 patients
4.5 L.P.N's/10 DCC R.N.'s

Projections were made on the state level only.

b. *Orthopedic/Rehabilitation*

The Kentucky TAG recommended the following staffing ratios for these facilities:

LOWER BOUND – Desired ratio of:
4 R.N./30 patients - days (2 shifts)
1 R.N./30 patients - nights (1 shift)

1 L.P.N./1 R.N. - days (2 shifts)
2 L.P.N.'s/1 R.N. - nights (1 shift)

Calculations: This means that during the two-day shifts, it is desired to have four R.N.'s on duty at all times for every 30 patients; on the night shift, 1 R.N. for every 30 patients is desired.

To have one nurse on all shifts (24-hour coverage), it is necessary to employ 4.9 FTE R.N.'s. For one shift, it is 1/3 of 4.9 or 1.63.

1 day shift - R.N.
1.63
X 4 (per 30 patients)
6.52

2 day shifts - R.N.'s
6.52
X 2 (per 30 patients)
13.04

1 night shift - R.N.
1.63
X 1 (per 30 patients)
1.63

All shifts - R.N.'s
13.04
+1.63
14.67 (per 30 patients)

To convert this to a R.N./100 patients ratio:

$\frac{14.67}{30} = \frac{x}{100}$ x = 48.9 R.N.'s/100 patients

* * * * * * * * * * *

2 day shifts - L.P.N.
13.04 (1 R.N.:1 L.P.N.)

1 night shift - L.P.N.
1.63
X 2 (per 1 R.N.)
3.26 (per 1 R.N.)

Total All Shifts - L.P.N.

13.04
+3.26
16.30 (per 30 patients)

To convert to an L.P.N./100 patients ratio, then to an L.P.N./R.N. ratio:

$\frac{16.3}{30} = \frac{x}{100} =$ 54.33 L.P.N.'s/100 patients

$\frac{54.33}{48.9} = \frac{x}{10}$ x = 11.11 L.P.N.'s/10 R.N.'s

UPPER BOUND – Desired ratio of:
6 R.N./30 patients - 2 day shifts
2 R.N./30 patients - 1 night shift

1 day shift - R.N.
1.63
X 6 (per 30 patients)
9.78

2 day shifts - R.N.
9.78
X 2 (per 30 patients)
19.56

1 night shift - R.N.
1.63
X 2 (per 30 patients)
3.26

Total All Shifts
19.56
+3.26
22.82 (per 30 patients)

To convert this to R.N./100 patients ratio:

$\frac{22.82}{30} = \frac{x}{100}$ x = 76.06 (per 100 patients)

L.P.N. Upper Bound is the same as the Lower Bound.

c. *Intermediate Care/Mentally Retarded*

The Kentucky TAG recommended the following staffing ratio:

Intermediate Care/Mentally Retarded

LOWER BOUND – Desired ratio of:
4 R.N./100 patients
2 L.P.N./1 R.N.

To convert to 24-hour coverage:

4.9 FTE R.N.'s
X4
19.6 FTE R.N.'s/100 patients

To convert L.P.N. ratio to L.P.N./10 R.N.'s ratio:

2 L.P.N./1 R.N. = 20 L.P.N./10 R.N.'s

UPPER BOUND – Desired ratio of:
5 R.N.'s/100 patients
1 L.P.N./1 R.N.

To convert to 24-hour coverage:

4.9
X5
24.5 FTE R.N.'s/100 patients

To convert L.P.N. ratio to L.P.N./10 R.N.'s ratio:

1 L.P.N./1 R.N. = 10 L.P.N.'s/10 R.N.'s

2. Short-Term Acute Care Hospitals

The Kentucky TAG accepted the recommendations of the WICHE Panel of Experts for all short-term acute care hospital units except for critical care.

a. *Small, under 100-bed hospitals – all units*

LOWER BOUND – 49 R.N.'s/100 patients
2.4 L.P.N.'s/10 R.N.'s
UPPER BOUND – 56.5 R.N.'s/100 patients
2.1 L.P.N.'s/10 R.N.'s

b. *100-400 Bed Hospitals*

i. Newborn unit:

LOWER BOUND – 49 R.N.'s/100 patients
2.4 L.P.N.'s/10 R.N.'s
UPPER BOUND – 56.5 R.N./100 patients
2.1 L.P.N./10 R.N.'s

ii. General acute care:

LOWER BOUND – 49 R.N.'s/100 patients
2.4 L.P.N.'s/10 R.N.'s
UPPER BOUND – 56.5 R.N.'s/100 patients
2.1 L.P.N.'s/10 R.N.'s

iii. Critical care:

LOWER BOUND – 250 R.N.'s/100 patients
(When considering that 4.9 FTE R.N.'s are needed to staff 1 R.N./shift, this is equivalent to a 1 R.N.:2 patient ratio per shift.)
UPPER BOUND – 300 R.N./100 patients

L.P.N.'s would not be used in critical care units.

c. *Large, Over 400 Beds or Teaching Hospitals*

i. Newborn unit: Identical to ratio of newborn units in 100-400 bed hospitals
ii. General acute care: Identical to ratio of general acute care in 100-400 bed hospitals

iii. Critical care units:

LOWER BOUND – 300 R.N.'s/100 patients
(When considering that it takes 4.9 FTE R.N.'s to staff 1 nurse per shift, this is equivalent to a 1.2 R.N.: 2 patient ratio.)
UPPER BOUND – 350 R.N.'s/100 patients

L.P.N.'s would not be used in these units.

OTHER HOSPITAL SERVICES

The Kentucky TAG accepted the recommendation of the National Panel of Experts for surgical services and emergency room visits; however, it changed the staffing ratio for outpatient visits.

1. Surgical:

LOWER BOUND – Desired ratio of:
3 operations/shift One year = 225 shifts/R.N.

3 operations/shift X 225 shifts/R.N. = 675 operations/R.N. per year

To convert to an R.N./1000 operations ratio:

$$\frac{1 \text{ R.N.}}{675 \text{ operations}} = \frac{x}{1000 \text{ operations}} \quad x = 1.5 \text{ R.N./1000 operations}$$

UPPER BOUND – Desired ratio of:
2.47 operations/shift

2.47 operations/shift X 225 shifts/R.N. = 555.5 operations/R.N.

To convert to R.N./1000 services ratio:

$$\frac{1\ \text{R.N.}}{555.5\ \text{operations}} = \frac{x}{1000\ \text{operations}} \quad x = 1.8\ \text{R.N./1000 services}$$

No L.P.N.'s will be used.

2. Emergency Room Visits

LOWER BOUND — Desired ratio of:
20 services/shift per R.N.

To convert to R.N./1000 services:

20 services/shift X 225 shifts/R.N. = 4500 services/R.N.

$$\frac{1\ \text{R.N.}}{4500\ \text{services}} = \frac{x}{1000\ \text{services}} \quad x = .22\ \text{R.N./1000 services}$$

Desired L.P.N. ratios : 1 L.P.N. : 2 R.N.'s = 5 L.P.N's/10 R.N.'s

UPPER BOUND — Desired ratio of
10 services/shift

10 services/shift X 225 shifts = 2250 shifts/R.N.

$$1\ \text{R.N./2250 services} = \frac{x}{1000\ \text{services}} \quad x = .44\ \text{R.N./1000 services}$$

3. Outpatient Visits

LOWER BOUND — Desired ratio of:
30 services/shift (R.N.)

To convert to R.N./1000 services:

30 services/shift X 225 shifts = 6750 services

$$\frac{1\ \text{R.N.}}{6750\ \text{services}} = \frac{x}{1000\ \text{services}} \quad x = .15\ \text{R.N./1000 services}$$

Desired L.P.N. ratio — 10 L.P.N./10 R.N. (1:1 ratio)

UPPER BOUND — Desired ratio of:
18.5 services/shift

18.5 services/shift X 225 shifts/R.N. = 4162.5 services/1 R.N.

$$\frac{1\ \text{R.N.}}{4162.5\ \text{services}} = \frac{x}{1000\ \text{services}} \quad x = .24\ \text{R.N./1000 services}$$

L.P.N.'s are the same as Lower Bound.

LONG TERM CARE FACILITIES

The Kentucky TAG recommended the following staffing ratios:

1. Skilled Nursing/Nursing Home Beds

LOWER BOUND – Desired ratio of:
1 R.N./shift + 10% for nursing home beds

4.9 (1 R.N./shift, 24 hours)
+.49 (10% of 4.9)
5.39 FTE R.N.

L.P.N. Desired ratio – 6.7 L.P.N.'s/10 R.N.'s

UPPER BOUND – Desired ratio of:
2.5 R.N./shift + 15% for nursing home beds

4.9 (24-hour coverage)
X2.5
12.25

12.25 + .15(12.25) = 12.985 FTE R.N.

L.P.N. ratio same as Lower Bound.

2. Intermediate Care

LOWER BOUND – Desired ratio of:
1 R.N./shift

To provide 24-hour coverage = 4.9 FTE R.N.

L.P.N. desired ratio – 30 L.P.N.'s/10 R.N.'s

UPPER BOUND – Desired ratio of:
2 R.N.'s (day shifts)
1 R.N. (night shift)

1 day shift	2 day shifts
1.63	3.26
X 2 (per shift)	X 2
3.26	6.52

1 night shift	Total all shifts
1.63	6.52
	+1.63
	8.15

L. P.N. desired ratio is the same as the Lower Bound.

PHYSICIANS' OFFICES

The Kentucky TAG accepted the staffing ratio for physicians' offices recommended by the National Panel of Experts.

LOWER BOUND — Desired ratio of:
2 R.N.'s for every 10 M.D.'s
3 L.P.N.'s for every 10 R.N.'s
UPPER BOUND — Desired ratio of:
2.2 R.N.'s for every 10 M.D.'s
2 L.P.N.'s for every 10 R.N.'s

COMMUNITY HEALTH

The WICHE National Panel of Experts, in consultation with community health experts throughout the country, developed a new approach to determine staffing requirements to meet community health needs. The Kentucky Nursing TAG accepted this methodology and criteria for staffing for all community health projections except for primary care centers, mental health clinics, and school health nursing.

(Note: 240 working days per year is the number estimated for community heatlh as recommended by the WICHE National Panel of Experts.)

1. Home Health Care

Basis: hospital discharge follow-up, and an alternative to nursing home care
Staffing: 11 visits/client/year
4 to 6 visits/RN/day

a.

1974 hospital discharges	35,860,000	
% requiring follow-up	x 5%	
total number of clients	1,793,000	
	Minimum	Maximum
visits/client/year	x 11	x 11
visits/RN/day	÷ 6	÷ 4
RN working days/year	÷ 240	÷ 240
total FTE RN	13,697	20,544
total population, 1974	209,418,000	209,518,000
RN/10,000 population	0.65	0.98

b.

1974 number of persons 65 and over	21,824,000	
% requiring home service	x 3%	
total number of clients	654,720	
	Minimum	Maximum
visits/client/year	x 11	x 11
visits/RN/day	÷ 6	÷ 4
RN working days/year	÷ 240	÷ 240
total FTE RN	5,001	7,502
1974 population over 64	21,824,000	21,824,000
RN/10,000 over 64	2.29	3.44

TOTAL

Cohort	RN/10,000 in cohort Minimum	Maximum
total population	0.65	0.98
over 64 years	2.29	3.44

187

2. General Home Visits

Basis: persons in identifiable high-risk groups
Staffing: 4 visits/client/year
5 to 7 visits/RN/day

a. 1974 number of births	3,160,000	
% without prenatal care	x 9%	
total number of clients	284,400	
	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	677	948
1974 number of births	3,160,000	3,160,000
RN/10,000 births	2.14	3.00

b. 1974 number of infant deaths (1 month to 1 year)	52,300	
	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	125	175
1974 number of infant deaths	52,300	52,300
RN/10,000 infant deaths	23.90	33.27

c. 1974 number of births	3,160,000	
% high risk and other follow-up	x 10%	
total number of clients	316,000	
	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	752	1,053
1974 number of births	3,160,000	3,160,000
RN/10,000 births	2.38	3.33

d. 1974 number of persons under 17	63,117,000	
% with other morbidity	x 5%	
total number of clients	3,155,850	
	Minimum	Maximum
visits/client	x 4	x 5
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	7,514	10,520
1974 persons under 17	63,117,000	63,117,000
RN/10,000 under 17	1.19	1.67

e.

1974 total population	209,518,000	
% with active TB and hepatitis	x 0.3%	
total number of clients	628,554	
	Minimum	**Maximum**
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	1,497	2,095
1974 total population	209,518,000	209,518,000
RN/10,000 population	0.07	0.10

f.

1974 population 17 and older	146,401,000	
% with chronic illness	x 5%	
total number of clients	7,320,050	
	Minimum	**Maximum**
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	17,428	24,400
1974 population over 16	146,401,000	146,401,000
RN/10,000 over 16	1.19	1.67

g.

1974 total population	209,518,000	
% environmental visits	x 0.5%	
total number of clients	1,047,590	
	Minimum	**Maximum**
visits/client	x 1	x 1
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	624	873
1974 total population	209,518,000	209,518,000
RN/10,000 population	0.03	0.04

TOTAL

Cohort	RN/10,000 in cohort	
	Minimum	**Maximum**
life births	4.52	6.33
infant deaths	23.90	33.27
under 17 years	1.29	1.81
over 17 years	1.29	1.81

3. Health Clinics

a. *Health Departments*

	Minimum	Maximum
Estimated FTE required, 1974	20,000	30,000
1974 Total Population	209,518,000	209,518,000
R.N./Total Population	0.95	1.43

TOTAL

Cohort	R.N./10,000 in cohort	
	Minimum	Maximum
Total Population	0.95	1.43

b. *Mental Health Clinics*

The Kentucky TAG recommended the following staffing ratio:

LOWER BOUND — Desired ratio of:
4.16 R.N.'s/10,000 population
UPPER BOUND — Desired ratio of:
5.83 R.N.'s/10,000 population

Calculations:

3,567,144	1980 Estimated State Population
X 20%	% Population Believed to Need Services
713,428.8	Estimated Number of Clients

7 visits/client = Avergae from DHR - Mental Health

4,994,001.6	= Number of Visits
X 50%	= % of Visits Involving Nursing
2,497,000.8	= Number of Visits Involving Nursing

LOWER BOUND	UPPER BOUND	
2,497,000.8	2,497,000.8	
÷ 7	÷ 5	— Visits/R.N./day
= 356,714.4	= 499,400.16	
÷ 240	÷ 240	— R.N. Working days/year
= 1,486.31	= 2,080.83	—Total FTE R.N.
1486.31 FTE R.N.'s = 4.16 FTE R.N.'s/10,000 pop.	2,080.83 FTE R.N.'s = 5.83 FTE R.N.'s/10,000 pop.	

c. *Primary Care Centers*

The Kentucky TAG recommended the staffing of one (1) R.N. per primary care center. Projections are made on the state level only.

4. School Health Nursing

LOWER BOUND — Desired ratio of:
13.14 R.N.'s/10,000 population, ages 5-17
UPPER BOUND — Desired ratio of:
24.2 R.N.'s/10,000 population, ages 5-17

Calculations:

755,550 – Total School Population (K-12 Grades)

Desired ratio of 1 R.N. for each 400-750 students.

LOWER BOUND — $$\frac{\text{1 R.N.}}{\text{750 students}} = \frac{x}{\text{1000 students}}$$

x = 1.33 FTE R.N.'s/1000 students

$$\frac{\text{1.33 FTE R.N.}}{\text{1000 students}} \text{ X } 755{,}550 = \text{1,004.88 Total FTE R.N.'s}$$

$$\frac{\text{1004.88 FTE R.N.}}{\text{764,850 total population}} = \frac{x}{\text{10,000 population}}$$

ages 5-17 x = 13,14 FTE R.N.'s/10,000 population

UPPER BOUND — $$\frac{\text{1 R.N.}}{\text{400 students}} = \frac{x}{\text{1000 students}} \qquad x = 2.5$$

$$\frac{\text{2.5 FTE R.N.'s}}{\text{1000 students}} \text{ X } 755{,}550 = \text{1,887.87 FTE R.N.'s}$$

$$\frac{\text{1.888.87 FTE R.N.'s}}{\text{764,850 population}} = \frac{x}{10{,}000} \qquad x = \text{24.7 R.N.'s/10,000 population}$$

5. Occupational Health Nursing

The Kentucky TAG accepted the recommendations of the National Panel of Experts. Projections are based on non-government employees working for large firms (those with 500 or more employees.)

Desired ratio of 1 FTE R.N. per 500 employees (both Lower and Upper Bound.)

Calculations:

Number 1974 employees in large firms: 15,429,000
1 FTE R.N./500 employees = 30,858 FTE R.N.
1974 population, ages 17-64[8] = 124,577,000

$$\frac{\text{30,858 FTE R.N.}}{\text{124,577,000 population}} = \frac{x}{\text{10,000 population}} \qquad x = 2.48$$

NURSE ADMINISTRATORS

The Kentucky TAG recommended the following staffing ratios:

1. Executive Nurse Administrator

		Administrator/Institution
a.	*Psychiatric*	4
b.	*Long-Term Acute Care Hospital*	4
c.	*Short-Term, small, under 100 beds*	3
d.	*Short-Term, 100-400 beds*	5
e.	*Large, over 400 beds or teaching*	5
f.	*All Skilled and Intermediate Care Facilities*	1
g.	*Community Health*	1

2. Mid-level Nurse Supervisor

Staffing is based on the number of supervisors per 10 direct client care R.N.'s within a care setting.

		Supervisors/10 DCC R.N.'s
a.	*Psychiatric*	1
b.	*Long-Term Acute Care*	1
c.	*Small, under 100-bed hospitals*	1
d.	*Short-Term, 100-400 bed hospitals*	1.6
e.	*Short-term, large, over 400 beds or teaching hospitals*	2

SCHOOLS OF NURSING

Projections for nursing school facility and administrators are made on the state level only. Projections are based on full-time equivalent enrollment.

1. Faculty

   a. *Doctoral Program*

   LOWER BOUND – 1.67 faculty/10 students
   UPPER BOUND – 2.5 faculty/10 students

   b. *Master's Program*

   LOWER BOUND – 1.67 faculty/10 students
   UPPER BOUND – 2.5 faculty/10 students

   c. *Baccalaureate Programs*

   LOWER BOUND – 1.25 faculty/10 students
   UPPER BOUND – 1.67 faculty/10 students

d. *Associate Degree Programs*

LOWER BOUND – 1.0 faculty/10 students
UPPER BOUND – 1.25 faculty/10 students

e. *Diploma Program*

LOWER BOUND – 1.0 faculty/10 students
UPPER BOUND – 1.25 faculty/10 students

f. *Practical Nurse Programs*

LOWER BOUND – 1.0 faculty/10 students
UPPER BOUND – 1.25 faculty/10 students

2. Administrators

The staffing ratios for all six types of nursing schools are the same:

1 administrator per 10 faculty

RESEARCHERS AND CONSULTANTS

Projections are based on the number of direct-client care R.N.'s projected for each district. The Kentucky TAG recommended the following staffing ratio:

LOWER BOUND – Desired ratio of:
.1 researcher or consultant/10 DCC R.N.'s
UPPER BOUND – Desired ratio of:
.2 researcher or consultant/10 DCC R.N.'s

NURSING STAFF DEVELOPMENT

The Kentucky TAG recommended the following staffing ratios:

1. Large, Over 400-bed Acute Care or Teaching Hospitals

LOWER BOUND – 5 per institution
UPPER BOUND – 6 per institution

2. Acute Care Hospitals, 300-399 beds

LOWER BOUND – 4 per institution
UPPER BOUND – 5 per institution

3. Acute Care Hospitals, 200-299 beds

LOWER BOUND – 3 per institution
UPPER BOUND – 4 per institution

4. Acute Care Hospitals, 100-199 beds

LOWER BOUND – 2 per institution
UPPER BOUND – 3 per institution

5. Less than 100-bed Acute Care Hospitals

LOWER BOUND – 1 per institution
UPPER BOUND – 2 per institution

HEALTH–RELATED ORGANIZATIONS

The Kentucky TAG accepted the staffing ratio recommended by the WICHE National Panel of Experts. Projections are made on the state level only.

LOWER BOUND – .4 per 10,000 total state population
UPPER BOUND – .5 per 10,000 total state population

PRIVATE DUTY

The Kentucky TAG accepted the staffing ratio recommended by the WICHE National Panel of Experts.

LOWER BOUND – 1 R.N. per 10,000 population
UPPER BOUND – .9 R.N. per 10,000 population

APPENDIX C

WICHE
Panel of Expert Consultants' Criteria for Nursing Staffing and R.N. Educational Preparation

Field of Employment	Criteria for Staffing: Lower Bound R.N.'s Per 100 Patients	Lower Bound L.P.N.'s Per 100 Patients	Lower Bound Aides Per 100 Patients	Upper Bound R.N.'s Per 100 Patients	Upper Bound L.P.N.'s Per 100 Patients	Upper Bound Aides Per 100 Patients	Criteria for R.N. Educational Preparation: DOC (%)	MSN (%)	BACC. (%)	AD/DIP (%)
INPATIENT SERVICES										
General units*	49.0	12.0	12.0	56.5	12.0	12.0			50	50
Rehabilitation units	49.0	12.0	12.0	56.5	12.0	12.0			50	50
Newborn units	49.0	12.0	12.0	56.5	12.0	12.0			20	80
Critical care units	200.0	0.0	0.0	250.0	0.0	0.0			50	50
Extended care units	20.0	20.0	20.0	30.0	20.0	20.0			50	50
All units in hospitals under 100 beds	49.0	12.0	12.0	56.5	12.0	12.0			50	50
Long-term hospitals (psychiatric)	13.0	10.0	30.0	22.0	10.0	30.0			50	50
Psychiatric units in all short-term hospitals	49.0	0.0	24.0	56.5	0.0	24.0			50	50
OTHER HOSPITAL SERVICES										
Operating room	1.5 R.N.'s per 1000 operations (10 R.N.'s/0 L.P.N.'s/3 Aides)			1.8 R.N.'s per 1000 operations (10 R.N.'s/0 L.P.N.'s/2 Aides)						100
Emergency room	0.22 R.N.'s per 1000 visits (10 R.N.'s/10 L.P.N.'s/ 10 Aides)			0.44 R.N.'s per 1000 (10 R.N.'s/10 L.P.N.'s/ 5Aides)					50	50
Outpatient clinics	0.11 R.N.'s per 1000 visits (10 R.N.'s/10 L.P.N.'s/ 10 Aides)			0.23 R.N.'s per 1000 visits (10 R.N.'s/10 L.P.N.'s/ 5 Aides)				10	80	10

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*General units includes adult medical-surgical, pediatrics, and maternity.

SOURCE: Western Interstate Commission for Higher Education, Analysis and Planning for Improved Distribution of Nursing Personnel and Services-Panel of Expert Consultants: Final Report, June, 1978, pp. 151-155.

Field of Employment	Criteria for Staffing Lower Bound R.N.'s	 L.P.N.'s	 Aides	 Upper Bound R.N.'s	 L.P.N.'s	 Aides	Criteria for R.N. Educational Preparation DOC (%)	 MSN (%)	 BACC. (%)	 AD/DIP (%)
	Per 100 Patients			Per 100 Patients						
NURSING HOMES										
Nursing care homes	9.0	23.0	23.0	20.0	40.0	40.0			50	50
Personal care homes with nursing	5.0	10.0	20.0	5.0	10.0	20.0			50	50
PHYSICIANS' OFFICES	2.0 R.N.'s per 10 M.D.'s (10 R.N.'s/3 L.P.N.'s/0 Aides)			2.2 R.N.'s per 10 M.D.'s (10 R.N.'s/2 L.P.N.'s/0 Aides)				25	25	50
COMMUNITY HEALTH										
Home Health care	See Attachment A for Detailed Criteria.							10[1]	75	15
General public health								10[1]	90	
Clinic								10[1]	75	15
School health	1 R.N. per 1500 students (grades 1-12)			1 R.N. per 750 students (grades 1-12)				10[1]	90	
Occupational health	1 R.N. per 500 employees			1 R.N. per 500 employees				10[1]	90	
Other								10[1]	90	
NURSE PRACTITIONERS										
Hospital ambulatory care	10% of hospital ambulatory care R.N.'s			13% of hospital ambulatory			Currently certificate and/ormaster's preparation exist			
Physicians' Offices	15% of R.N.'s in physicians' offices			25% of R.N.'s in physicians' offices			Currently certificate and/or master's preparation exist			
Community health	10% of R.N.'s in public health			10% of R.N.'s in public health			Currently certificate and/or master's preparation exist			
Nursing Homes	40% of clinical specialists in nursing homes			50% of clinical specialists in nursing homes				100		

Field of Employment	Criteria for Staffing Lower Bound	 Upper Bound	Criteria for R.N. Educational Preparation DOC (%)	 MSN (%)	 BACC. (%)	 AD/DIP (%)
	R.N.'s Per 100 Patients	R.N.'s Per 100 Patients				
CLINICAL SPECIALISTS						
Large teaching (more than 400 beds)	3.0	5.0	Educational preparation for all clinical specialists is at graduate level			
Small (less than 100 beds), and long-term hospitals	2.0	4.0				
All other short-term hospitals	2.0	4.0	Projections made for 100% master's preparation			
Nursing Care homes	0.5	1.0				
Personal care homes with nursing	0.2	0.3				
Hospital ambulatory care	1 per 20 DCC R.N.'s	1 per 20 DCC R.N.'s				
Community health nursing	1 per 20 DCC R.N.'s	1 per 20 DCC R.N.'s				
ADMINISTRATIVE POSITIONS[3]						
Executive/Principal Nurse Administrator[4]						
All hospitals	1 Director of Nursing per institution		5	95		
Large teaching (more than 400 beds)	2-3 Assistants and/or associate directors per institution		5	95		
All other short-term hospitals	1-2 Assistants and/or associate directors per institution		5	95		
Nursing care homes	1 Director of Nursing per institution		5	95		
Personal care homes with nursing	1 Director of Nursing per institution		5	95		
Community health nursing	1 Director per agency		5	95		

	Criteria for Staffing		Criteria for R.N. Educational Preparation			
Field of Employment	Lower Bound	Upper Bound	DOC (%)	MSN (%)	BACC. (%)	AD/DIP (%)
ADMINISTRATIVE POSITIONS[3] - Continued						
Mid-level Nurse Administrators/ Managers[5]						
All hospitals	1 Head Nurse per 30 patients			25	75	
All hospitals	1 Supervisor per 100 patients			25	75	
Nursing care homes	1 R.N. per 10 DCC R.N.'s			25	75	
Personal care homes with nursing	0.5 R.N. per 10 DCC R.N.'s			25	75	
Community health nursing	1 R.N. per 10 DCC R.N.'s			25	75	
INSERVICE INSTRUCTORS						
Short-term, large, teaching hospitals	3 R.N.'s per institution	6 R.N.'s per institution		100		
Nursing homes and all other	0.5 R.N.'s per institution	1 R.N. per institution		100		
Community health nursing	0.5 R.N. per agency	1 R.N. per agency		100		
RESEARCHERS AND CONSULTANTS	0.1 R.N. per 10 DCC R.N.'s	0.3 R.N. per 10 DCC R.N.'s	50	50		

Field of Employment	Criteria for Staffing		Criteria for R.N. Educational Preparation			
	Lower Bound	Upper Bound	DOC (%)	MSN (%)	BACC. (%)	AD/DIP (%)
SCHOOLS OF NURSING						
Administrators	1 per school and 1 per program (first 200 students), and 1 per each additional 200 students[6]					
Doctorate, master's, baccalaureate			100			
Associate, diploma			25	75		
L.P.N.				100		
Faculty						
Doctorate	1 R.N. per 6 students	1 R.N. per 4 students	100			
Master's	1 R.N. per 6 students	1 R.N. per 4 students	75	25		
Baccalaureate	1 R.N. per 8 students	1 R.N. per 6 students	20	80		
Associate	1 R.N. per 10 students	1 R.N. per 8 students	10	90		
Diploma	1 R.N. per 10 students	1 R.N. per 8 students	10	90		
L.P.N.	1 R.N. per 10 students	1 R.N. per 8 students		60	40	
PRIVATE DUTY	1 R.N. per 10,000 population	0.9 R.N. per 10,000 population[7]			20	80
HEALTH-RELATED ORGANIZATIONS	0.4 R.N. per 10,000 population	0.5 R.N. per 10,000 population	10	90		

Footnotes

[1] The Panel proposed that 10% of community health nurses be prepared at the graduate level but did not specify the percentage breakout between master's and doctoral levels. The numerical projections made in this report are based on master's-level preparation only because of the nature of the projection method used.

[2] For the purpose of the projections, this was converted from 2.5 to 2.75% of direct client care in nursing homes.

[3] The same criteria hold for both lower and upper bound projections for RNs in administrative positions.

[4] For the purpose of the projections, this was modified to three administrators for each large, teaching, short-term hospital; two administrators for each "all other" short-term hospital; and one administrator for each of the remaining institutions (and agencies).

[5] For the purpose of the projections, this was modified to two administrators for each 10 direct client care RNs in large, teaching, short-term hospitals; 1.6 administrators for each 10 direct client care RNs in "all other" short-term hospitals; and one administrator for each 10 direct client care RNs elsewhere.

[6] Because of the nature of the mapping of the existing data, the projections for school of nursing administrators were made on the following basis: three administrators for each baccalaureate program and one for each other program.

[7] As staffing approaches the upper bound, the need for private duty registered nurses will decrease.

ATTACHMENT A

I. Home Visiting

A. Home Health Care

Basis: hospital discharge follow-up, and an alternative to nursing home care
Staffing: 11 visits/client/year
4 to 6 visits/RN/day

1\.

1974 hospital discharges	35,860,000
% requiring follow-up	x 5%
total number of clients	1,793,000

	Minimum	Maximum
visits/client/year	x 11	x 11
visits/RN/day	÷ 6	÷ 4
RN working days/year	÷ 240	÷ 240
total FTE RN	13,697	20,544
total population, 1974	209,418,000	209,518,000
RN/10,000 population	0.65	0.98

2\.

1974 number of persons 65 and over	21,824,000
% requiring home service	x 3%
total number of clients	654,720

	Minimum	Maximum
visits/client/year	x 11	x 11
visits/RN/day	÷ 6	÷ 4
RN working days/year	÷ 240	÷ 240
total FTE RN	5,001	7,502
1974 population over 64	21,824,000	21,824,000
RN/10,000 over 64	2.29	3.44

TOTAL

Cohort	RN/10,000 in cohort Minimum	Maximum
total population	0.65	0.98
over 64 years	2.29	3.44

B. General Home Visits

Basis: persons in identifiable high-risk groups
Staffing: 4 visits/client/year
5 to 7 visits/RN/day

1\.

1974 number of births	3,160,000
% without prenatal care	x 9%
total number of clients	284,400

	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	677	948
1974 number of births	3,160,000	3,160,000
RN/10,000 births	2.14	3.00

ATTACHMENT A -- (continued)

2.	1974 number of infant deaths (1 month to 1 year)	52,300

	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	125	175
1974 number of infant deaths	52,300	52,300
RN/10,000 infant deaths	23.90	33.27

3.	1974 number of births	3,160,000
	% high risk and other follow-up	x 10%
	total number of clients	316,000

	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	752	1,053
1974 number of births	3,160,000	3,160,000
RN/10,000 births	2.38	3.33

4.	1974 number of persons under 17	63,117,000
	% with other morbidity	x 5%
	total number of clients	3,155,850

	Minimum	Maximum
visits/client	x 4	x 5
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	7,514	10,520
1974 persons under 17	63,117,000	63,117,000
RN/10,000 under 17	1.19	1.67

5.	1974 total population	209,518,000
	% with active TB and hepatitis	x 0.3%
	total number of clients	628,554

	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	1,497	2,095
1974 total population	209,518,000	209,518,000
RN/10,000 population	0.07	0.10

6.	1974 population 17 and older	146,401,000
	% with chronic illness	x 5%
	total number of clients	7,320,050

ATTACHMENT A – (continued)

	Minimum	Maximum
visits/client	x 4	x 4
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	17,428	24,400
1974 population over 16	146,401,000	146,401,000
RN/10,000 over 16	1.19	1.67

7. 1974 total population	209,518,000
% environmental visits	x 0.5%
total number of clients	1,047,590

	Minimum	Maximum
visits/client	x 1	x 1
visits/RN/day	÷ 7	÷ 5
RN working days/year	÷240	÷240
total FTE RN	624	873
1974 total population	209,518,000	209,518,000
RN/10,000 population	0.03	0.04

TOTAL

Cohort	RN/10,000 in cohort Minimum	 Maximum
life births	4.52	6.33
infant deaths	23.90	33.27
under 17 years	1.29	1.81
over 17 years	1.29	1.81

II. Clinic Visits

Basis: population requiring such services; due to lack of uniform data, only a total national estimate is possible

	Minimum	Maximum
estimated FTE required, 1974	20,000	30,000
1974 total population	209,518,000	209,518,000
RN/total population	0.95	1.43

TOTAL

Cohort	RN/10,000 in cohort Minimum	 Maximum
total population	0.95	1.43

Note: ratios cannot be calculated for each state individually

III. Occupational Health

Basis: non-government employees working for large firms (those with 500 or more employees)

Staffing: 1 FTE RN per 500 employees

1974 employees in large firms	15,429,000

ATTACHMENT A -- (continued)

	Minimum	Maximum
FTE RN per 500 employees	1	1
total FTE RN	30,858	30,858
1974 population, age 17-64	124,577,000	124,577,000
RN/10,000 population, 17-64	2.48	2.48

TOTAL

Cohort	RN/10,000 in cohort Minimum	Maximum
population age 17-64	2.48	2.48

IV. School Health

Basis: children in school
Staffing: 1 RN for each 750-1,500 students

	Minimum	Maximum
1974 number of students grades 1-12	48,756,000	
FTE RN per 1,000 students	0.67	1.33
total FTE RN	32,504	65,008
1974 population under 17	63,117,000	63,117,000
RN/10,000 population under 17	5.14	10.28

TOTAL

Cohort	RN/10,000 in cohort Minimum	Maximum
population under 17	5.14	10.28

V. Other (Licensure, Regulation, etc.)

Basis: a function of official agencies; data not available

TOTAL

Cohort	RN/10,000 in cohort Minimum	Maximum
total population	0.0	0.0

APPENDIX D

GLOSSARY

Clinical Nurse Specialist - A nurse prepared at the Master's or higher level in a specialty area such as geriatrics, pediatric or intensive care (Kentucky TAG).

Community Health - Refers to the application of prevention, health promotion, and maintenance services to populations of individuals and groups within their own environments of homes, schools, clinics, or work places in the community, and the application of public health measures to the community as a whole, such as epidemiology, investigation, law enforcement or organization of communities for health action (Gray and Sauer, 1978).

Community Mental Health Center - A community mental health center shall be a facility which will provide a comprehensive range of accessible, coordinated mental health services including direct patient services and direct mental health services, to patients of a designated area. The following services should be provided by this center: a) Emergency Services, b) Outpatient Services, c) Partial Hospitalization, d) Inpatient Services, e) Consultation and Education Services (902 KAR 20:090 Community Mental Health - Mental Retardation Centers Services).

Critical Care Unit - Refers to a special unit in which patients are concentrated, by reasons of serious illness, without regard to diagnosis (ICU Unit) and/or a special unit staffed and equipped solely for intensive care of cardiac patients (CCU Unit) special lifesaving techniques and equipment are immediately available, and patients showing under continuous observation by nursing staff especially trained and selected for the care of this type of patient. Critical care units also include those caring for high risk infants (Gray and Sauer, 1978).

Direct Client Care RN - Includes all those nursing positions in which the nurse's primary role is the provision of direct nursing care to patients (Gray and Sauer, 1978).

Emergency Visit - Refers to visits to organized facilities of a hospital for the provision of emergency outpatient services or conditions requiring immediate care (Gray and Sauer, 1978).

Executive Nurse Administrator - For hospitals, the director of nursing and any assistants; for schools of nursing, the dean and assistant dean or department chairperson (Kentucky TAG).

FTE - "Full time equivalent" - Calculated on the basis of two part time personnel equaling one full time employee (Kentucky TAG).

General Acute Care Bed - All beds in an acute care hospital excluding critical care beds and bassinets. Includes specialty beds such as psychiatric, rehabilitation and self care (Kentucky TAG).

General Home Visits - Refers to case finding within the community to identify and pursue individuals and groups at high risks or preventive morbidity and premature mortality for evaluation and follow-up, and home visiting to assist families to identify and solve those problems that affect their health or well-being (Gray and Sauer, 1978).

Health Clinic Care - Refers to health assessment and maintenance with acute conditions, acute exacerbations of chronic conditions, and care of ambulatory individuals with sub-acute and/or stabilized chronic conditions (Gray and Sauer, 1978).

Health Department - An agency operated by local and/or state government for the purpose of providing health care services to the community (Kentucky TAG).

Health Related Organizations - Refers to such organizations as professional associations, regional planning groups, state boards of nursing, health agencies, and the like that are concerned with health concerns and issues (Gray and Sauer, 1978).

Home Health Agency - An organization with facilities with qualified staff to provide intermittent medical services, including nursing services and other professional and technical services, required by the treatment, in accordance with the plan of treatment prescribed by a licensed physician, to patients, who have a variety of medical conditions, in their places of residence (902 KAR 20:080 Home Health Agency).

Home Health Care - Refers to that component of the community health nursing providing skilled nursing care to patients who are home bound or to ambulatory individuals who can be most appropriately served in their place of residence (Gray and Sauer, 1978).

Hospital Inpatient Services - Services provided to patients lodged in a hospital while receiving medical, dental, or other services (Kentucky TAG).

Infant Death - For the purposes of this report, infant death refers to "post neo natal infant death" - deaths of infants 1 month to one year of age (Gray and Sauer, 1978).

Inpatient Days - The number of adult and pediatric days of care rendered during the entire reporting period; exclude newborn days for care (American Hospital Association, 1980).

Intermediate Care - Intermediate care services are provided intermittently on a 24-hour basis by establishments with permanent facilities and health-related services to patients who do not require the degree of care and treatment which a hospital of skilled nursing facility is designed to provide, but who because of their mental or physical condition require care and services (above the level of room and board) which can be made available to them only through institutional facilities on an inpatient basis (902 KAR 20:050 Intermediate Care Facilities; Operation and Services).

Intermediate Care/Mental Retardation Facilities, (IC/MR) (OR Mental Retardation Developmentally Disabled, (MR/DD) - Section 2. Definitions: (1) Special intermediate care facilities for MR/DD are establishments which provide services for the mentally retarded and developmentally disabled and are defined as any public or private residential facility which provides on a regular basis health related care and services to individuals who because of their mental or physical condition require care and services (above the level of room and board) which can be made available to them only through institutional facilities at the level of intermediate care. The facility must meet the licensure requirements of an intermediate care facility pursuant to KRS 216.485. (2) Special intermediate care of the mentally retarded and the developmentally disabled is defined as a distinct category of care which is provided by mental retardation specialists and other health professionals in the treatment of MR/DD of all ages whose needs for emotional, physical, educational, and habilitative services are above the personal care level, but who do not require skilled nursing or acute care. (a) Within the MR/DD category of care the classification shall be as follows: 1. Class I Intermediate Care: Type M Medical/Nursing. Patients in this group are severely physically handicapped. This group requires the greatest concentration of professional staffing due to the complex problems in the group. 2. Class II Intermediate Care: Type M Medical/Constructive. Patients in this group may be autistic and/or have acting out behavior problems. The patients would not necessarily required organized group training programs but would require individualized therapy. 3. Class III Intermediate Care: Type S Social/Habilitative. Patients in this group are functioning at the lower level of mental retardation and/or overall adaptive behavior with few socially inappropriate behavioral problems or physical disabilities. Training efforts are directed to the development of self help skills and basic social behaviors.

4. Class IV Intermediate Care: Type S Social/Prevocational. Patients in this group are generally functioning in the middle and upper levels of mental retardation and/or overall adaptive behavior. Training efforts and program objectives are aimed at preparing the patients for vocational training and/or sheltered employment. (f) Intermediate care facilities. Type M (Medical): A home or establishment, or a distinct part of a home or establishment, however named, which is advertised, offered, maintained or operated for the purpose of providing patient accommodation for occupants needing institutional care, providing nursing and medical supervision and service less than the degree of care provided in a skilled nursing facility and more than the degree of care provided in an Intermedicate Care Facility, Type S. This type of facility has a registered nurse or a licensed practical nurse employed each day on the day shift with a registered nurse supervising nursing care. (g) Intermediate care facilities. Type S (Social): A home or establishment or a distinct part of a home or establishment, however named, which is advertised, offered, or maintained or operated for the purpose of providing accommodations for occupants needing institutional care and supervision of a degree less than that found in an intermediate care facility, Type M and greater degree than found in a personal care home. This type of facility is not required to have a registered nurse or licensed practical nurse employed but shall have employed a person(s) capable of providing socialization and/or habilitation programs (902 KAR 20:085 Special Services for Mentally Retarded and Developmentally Disabled).

Licensed Practical Nurse - (8) "Licensed Practical Nurse" shall mean one who is licensed under the provisions of KRS Chapter 314 to engage in licensed practical nursing practice. (9) "Licensed Practical Nursing Practice" shall mean the performance of acts requiring knowledge and skills such as are taught or acquired in approved schools for practical nursing in: (a) The observing and caring for the ill, injured or infirm under the direction of a registered nurse, a licensed physician or dentist. (b) The giving of counsel and applying procedures to safeguard life and health, as defined and authorized by the board. (c) The administration of medication or treatment as authorized by a physician or dentist licensed in this state and as further authorized or limited by the board which are consistent with the National Federation of Licensed Practical Nurses or with standards of practice established by nationally accepted organizations of licensed practical nurses. (d) Teaching or supervising except as limited by the board. (e) The performance of other nursing acts which are authorized or limited by the board and which are consistent with the National Federation or Licensed Practical Nurses' standards of practice or with standards of practice established by nationally accepted organizations of licensed practical nurses (Nurse Practice Act: KRS Chapter 314).

Live Birth - A live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles (Kentucky's State Center for Health Statistics, 1977).

Long-Term Acute Care Hospital - One in which the average length of stay for all patients is 30 days or more in which more than 50% of all patients are admitted to units with average length of stay of 30 days or more (American Hospital Association, 1980).

Long-Term Care Facility - A non-hospital based facility providing long-term care (over 30 days average length of stay) but not acute care or specialty care (Kentucky TAG).

Mental Health Clinic - See Community Mental Health Center.

Mid Level Nurse Supervisor - Nursing personnel responsible for 24-hour nursing care. For hospitals this would include supervisors and head nurses (Kentucky TAG).

Newborn Unit - Refers to unit caring for normal, newborn infants in nurseries (Gray and Sauer, 1978).

Nurse Practitioner - The Kentucky Board of Nursing registers as advanced registered nurse practitioner pursuant to KRS 314.131 those who: (1) Are currently licensed to practice as a registered nurse in Kentucky; (2) Have completed an organized post-basic program of study and clinical experience recognized by the board and one (1) of the following national organizations: American Nurses' Association, American College of Nurse Midwives, American Association of Nurse Anesthetists, National Board of Pediatric Nurse Practitioners/Associates, Nurses' Association of the American College of Obstetricians and Gynecologists, or other national organizations as designated by the board through amendment to this regulation and in collaboration with the Nurse Practice Council; and (3) Are currently certified by one (1) of the following national organizations: American Nurses' Association as practitioners and clinical specialists, American College of Nurse Midwives as nurse midwives, Council on Certification/Recertification of Nurse Anesthetists (or their predecessor, American Association of Nurse Anesthetists) as nurse anesthetists, National Board of Pediatric Nurse Practitioners/Associates as practitioners, Nurses' Association of the American College of Obstetricians and Gynecologists as practitioners, or other national organizations as designated by the board through amendment to this regulation and in collaboration with the Nurse Practice Council (201 KAR 20.056 Advanced registered nurse practitioner, Section 1).

Nursing Home Beds - The general definition for nursing homes is used for nursing home beds. Establishments with permanent facilities that include inpatient beds; and with medical services, including continuous nursing services, to provide treatment for patients who require inpatient care but do not currently require continuous hospital services, and who have a variety of medical conditions (902 KAR 20:047 Nursing Home Operations and Services).

Nursing Staff Development - Nurses employed for the purpose of providing orientation, inservice education, and/or continuing education to employees or health care institutions (Kentucky TAG).

Occupational Health Nursing - Refers to that branch of community health nursing whose primary focus is the health of the worker and whose responsibility includes the promotion of safety and health and the care for illness and injuries occurring in the work place (Gray and Sauer, 1978).

Orthopedic/Rehabilitative Hospital - For the purposes of this report, includes all hospitals which define themselves as long-term care but have specialty bed designations of orthopedic, pediatric-orthopedic rehabilitation (Kentucky TAG).

Outpatient Visits - Visits by patients who are not lodged in the hospital while receiving medical, dental, or other services (American Hospital Association, 1980).

Physician's Offices - Refers to a private practice, partnership, or corporation set up by an individual physician or group of physicians, in which a nurse functions in a supportive or collegial role (Gray and Sauer, 1978).

Primary Care Center - A primary care center is a public or private community-oriented organization with permanent facilities that provide the entry point into the health care delivery system to primarily ambulant patients of all ages. A primary care center provides a variety of preventative, diagnostic, and theapeutic services administered by appropriately licensed or certified members of the health profession to meet usual health care needs in a manner that assures the continuity of care (902 KAR 20:059 Primary Care Centers Services).

Private Duty Nurse - A nurse employed directly by the patient to provide individualized nursing care (Kentucky TAG).

Psychiatric Hospital - For the purpose of this report, any hospital which has a predominant portion of its beds listed as psychiatric beds (Kentucky TAG).

Registered Nurse - "Registered Nurse" shall mean one who is licesned under the provisions of KRS Chapter 314 to engage in registered nursing practice. "Registered nursing practice" shall mean the performance of acts requiring substantial specialized knowledge, judgment and nursing skill based on the principles of psychological, biological, physical and social sciences in the application of the nursing process in: (a) The care, counsel and health teaching of the ill, injured or infirm. (b) The maintenance of health or prevention of illness of others. (c) The administration of medication and treatment as prescribed by a physician or dentist licensed in this state and as further authorized or limited by the board, and which are consistent either with the American Nurses' Association standards of practice established or by nationally accepted organizations of registered nurses. (d) The supervision and teaching of other personnel in the performance of activities relating to nursing care. (e) The performance of other nursing acts which are authorized or limited by the board, and which are consistent either with American Nurses' Association standards of practice or with standards of practice established by nationally accepted organizations of registered nurses (Nurse Practice Act: KRS Chapter 314).

Researchers and Consultants - Consultants include those positions in which the primary responsibility is an advisory one. Nursing-related areas in which consultation is requested may include: client care, administration, instruction and research. Researchers include those positions in which the primary role responsibility is to direct and/or engage in nursing research (Gray and Sauer, 1978).

School Health Nursing - Refers to that component of community health nursing that focuses on health and health potential of school-age populations with emphasis on health education, guidance and counseling, and providing linkages between teachers, parents, and other health providers interpreting the health needs of school children (Gray and Sauer, 1978).

Skilled Nursing - Establishments with medical staffs; with permanent facilities that include inpatient beds; and medical services, including physician services and continuous nursing services to provide treatment for patients who require inpatient care but are not in a acute phase of illness, who currently require primarily convalescent or restorative services, and who have a variety of medical conditions (Kentucky Certificate of Need and Licensure, adapted by Kentucky TAG).

Surgical Services - Major and minor surgical operations performed in a hospital setting (Kentucky TAG).

Teaching Hospital - Any hospital in which a formal affiliation with a residency program exists (Kentucky TAG).